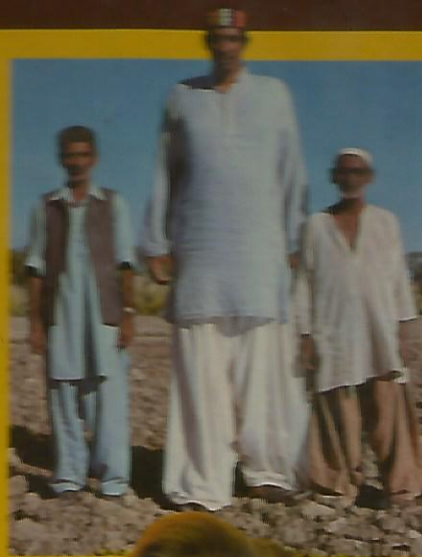


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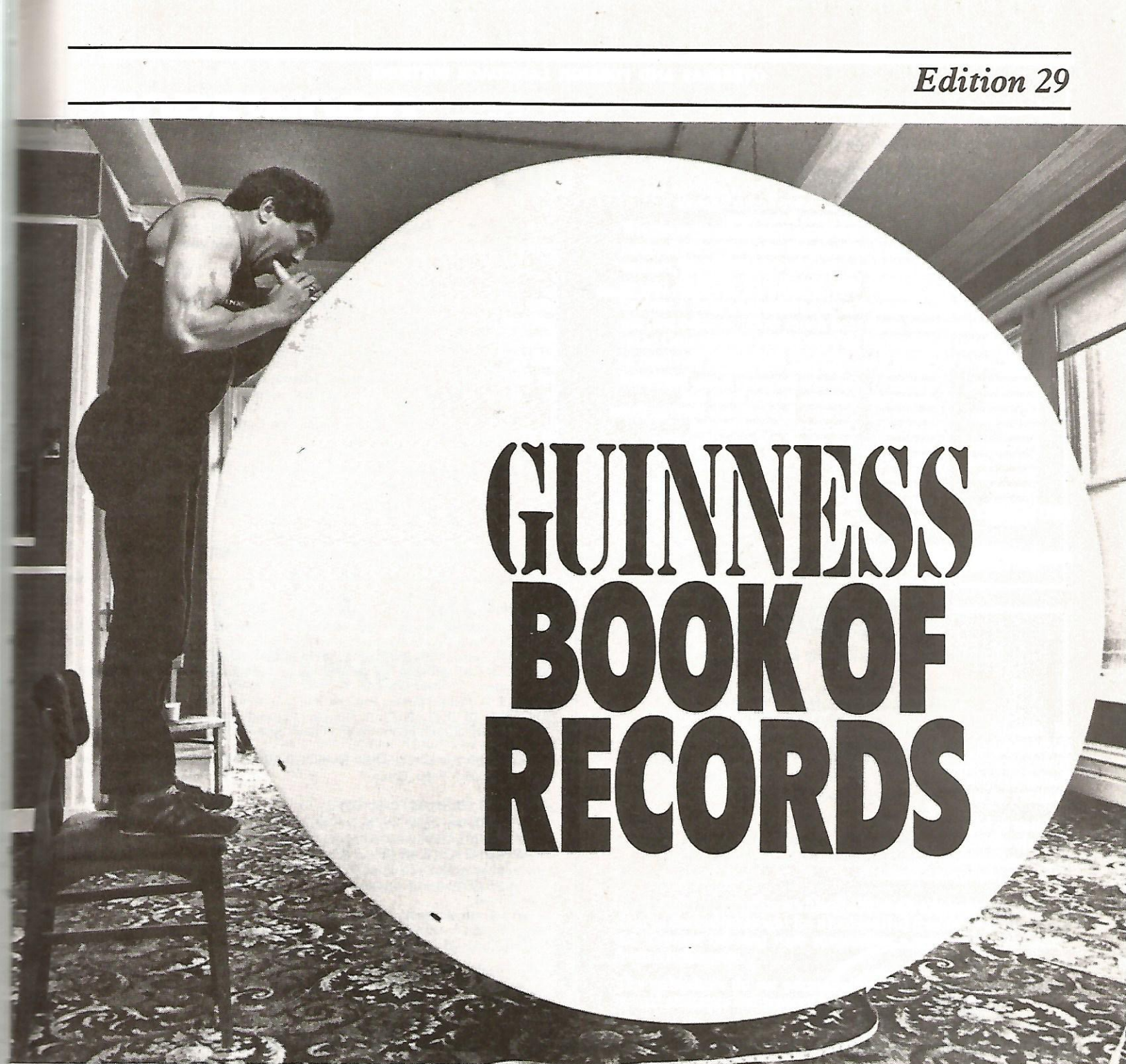


The most...on, in and beyond the Earth

CHAPTER ONE -	The Human Being.	CHAPTER SEVEN -	The World's Structures.
CHAPTER TWO -	The Living World.	CHAPTER EIGHT -	The Mechanical World.
CHAPTER THREE -	The Natural World.	CHAPTER NINE -	The Business World.
CHAPTER FOUR -	The Universe and Space.	CHAPTER TEN -	Human Achievements.
CHAPTER FIVE -	The Scientific World.	CHAPTER ELEVEN -	The Human World.
CHAPTER SIX -	The Arts and Entertainments.	CHAPTER TWELVE -	Sports, Games and Pastimes.

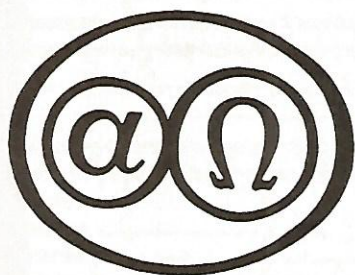
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STOP PRESS

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1. DIMENSIONS

TALLEST GIANTS

The true height of human giants is frequently obscured by exaggeration and commercial dishonesty. The only really admissible evidence on the actual height of giants is that collected in the last 100 years under impartial medical supervision. Unfortunately medical papers themselves, are not guiltless in including fanciful, as opposed to measured, heights.

The assertion that Goliath of Gath (c. 1060 BC) stood 6 cubits and a span (9 ft 6½ in 290 cm) suggests a confusion of units or some over-zealous exaggeration by the Hebrew chroniclers. The Jewish historian Flavius Josephus (born AD 37/38, died c. AD 100) and some of the manuscripts of the Septuagint (the earliest Greek translation of the Old Testament) attribute to Goliath the wholly credible height of 4 Greek cubits and a span (6 ft 10 in 208 cm).

Extreme mediaeval data, taken from bone measurements, invariably refer to specimens of extinct whale, giant cave bear, mastodon, woolly rhinoceros or other prehistoric non-human remains.

Giants exhibited in circuses and exhibitions are routinely under contract not to be measured and are, almost traditionally, billed by their promoters at heights up to 18 in 45 cm in excess of their true heights. There are many notable examples of this, and 23 instances were listed in the *Guinness Book of Records* (14th edition). The acromegalic giant Eddie Carmel (b. Tel Aviv, Israel, 1938), formerly 'The Tallest Man on Earth' of Ringling Bros. and Barnum & Bailey's Circus (1961–8) was allegedly 9 ft 0½ in 275 cm tall (weighing 38 st 3 lb 242 kg), but photographic evidence suggests that his true height was about 7 ft 6½ in 229.6 cm. He died in New York City on 14 Aug 1972 when his standing height, due to severe kyphoscoliosis, (two dimensional spinal curvature), was c. 7 ft 212 cm.

An extreme case of exaggeration concerned Siah Khān ibn Kashmir Khān (b. 1913) of Bushehr (Bushire), Iran. Prof. D. H. Fuchs showed photographs of him at a meeting of the Society of Physicians in Vienna, Austria, in January 1935, claiming that he was 320 cm 10 ft 6 in tall. Later, when Siah Khān entered the Imperial Hospital in Teheran for an operation, it was revealed that his actual height was a full metre less at 220 cm 7 ft 2.6 in.

World All-time

Modern opinion is that the tallest recorded man of whom there is irrefutable evidence was the pre-acromegalic giant Robert Pershing Wadlow, born at 6.30 a.m. on 22 Feb 1918 in Alton, Illinois, USA.

He was born to Mrs Addie Mae Wadlow (1896–1980) weighing 8 lb 6 oz 3.79 kg in Monroe St., Alton. His abnormal growth started at the age of 2 following a double hernia operation. His height progressed as follows:

Age in Years	Height		Weight lb	Weight kg	Age in Years	Height		Weight lb	Weight kg
5	5'4"	163 cm	105	48	15	7'8"	234 cm	355	161
8	6'0"	183 cm	169	77	16	7'10½"	240 cm	374	170
9	6'2½"	189 cm	180	82	17	8'0½"	245 cm	315¹	143
10	6'5"	196 cm	210	95	18	8'3½"	253 cm	—	—
11	6'7"	200 cm	—	—	19	8'5½"	258 cm	480	218
12	6'10½"	210 cm	—	—	20	8'6¾"	261 cm	—	—
13	7'1¾"	218 cm	255	116	21	8'8¼"	265 cm	491	223
14	7'5"	226 cm	301	137	22.4²	8'11"	272 cm	439	199

1 Following severe influenza and infection of the foot.

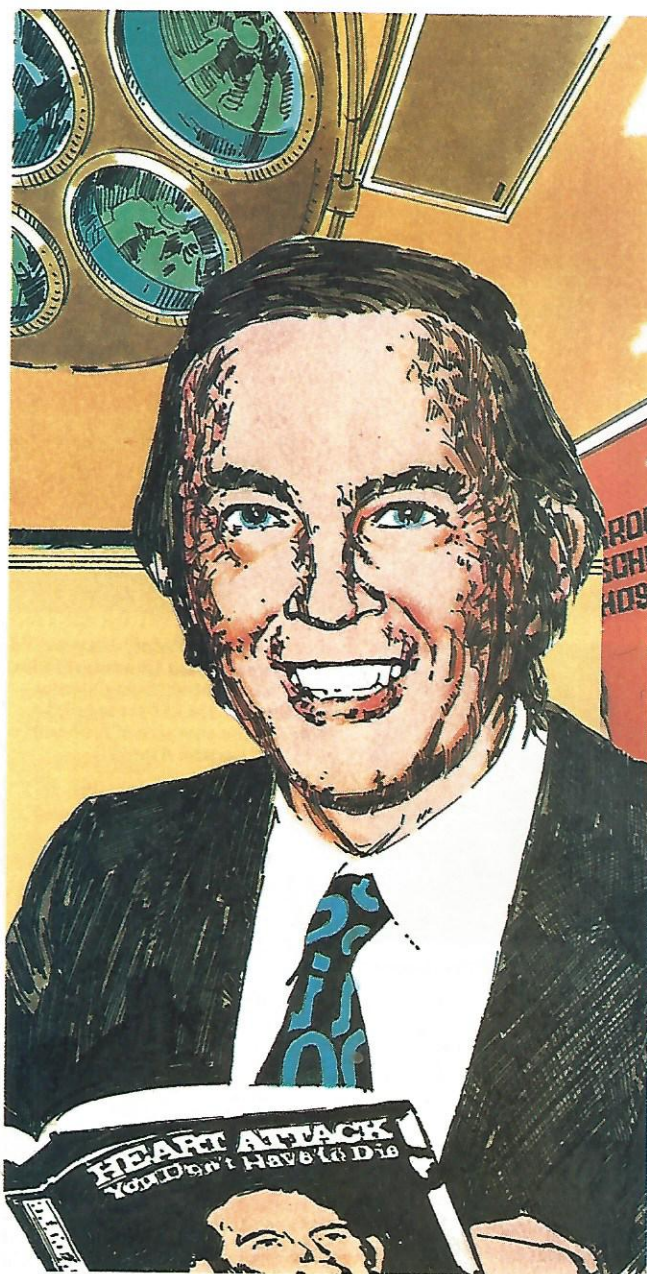
2 Wadlow was still growing during his terminal illness.

Dr C. M. Charles, Associate Professor of Anatomy at Washington University's School of Medicine in St Louis, Missouri and Dr Cyril MacBryde measured Robert Wadlow at 272 cm 8 ft 11.1 in in St Louis on 27 June 1940. Wadlow died 18 days later, at 1.30 a.m. on 15 July 1940, in Manistee, Michigan as a result of cellulitis (inflammation of cellular tissue) of the right ankle aggravated by a brace, which had been poorly fitted only a week earlier.

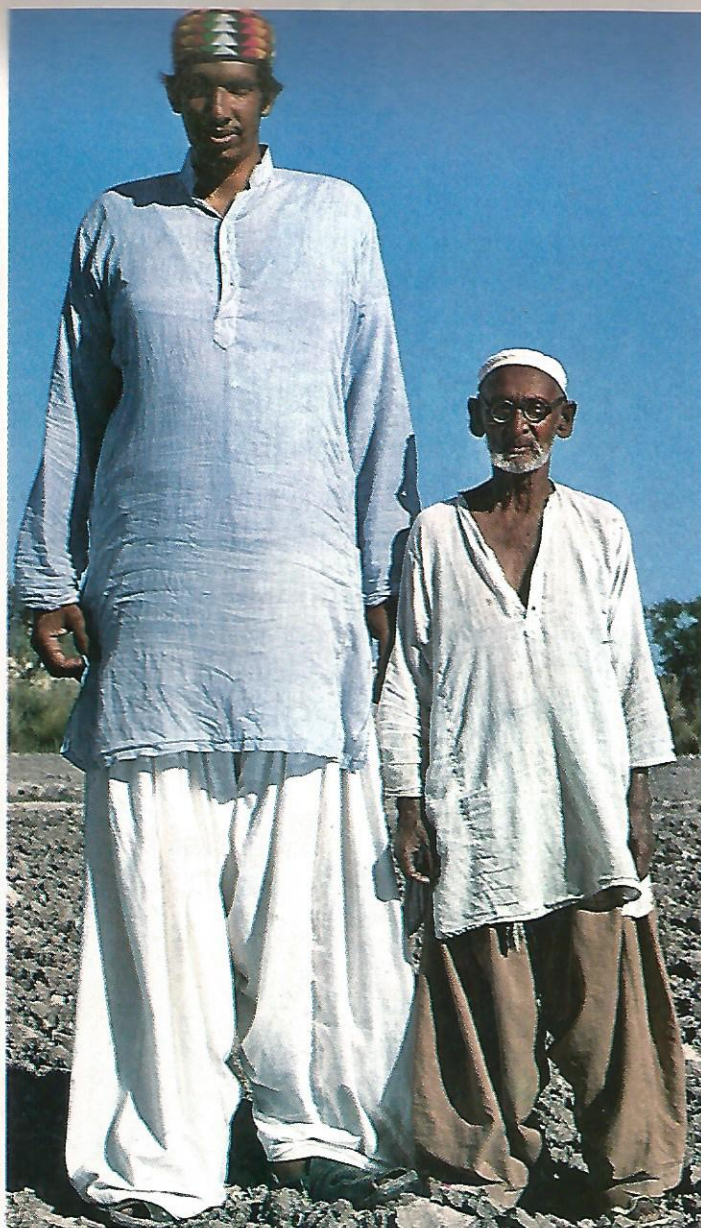
He was buried in Oakwood Cemetery, Alton, Illinois in a coffin measuring 10 ft 9 in 328 cm in length, 32 in 81 cm wide and 30 in

1. The Human Being

GUINNESS BOOK OF RECORDS



Earliest heart transplant



above and left: Twenty-six year old Muhammad Alam Channa of Pakistan is the tallest known living human standing 8 ft 3 in 251 cm in height. Note left the vast size of his hand (see p. 11). (Khurram Amrohi)

76 cm deep. His greatest recorded weight was 35 st 1 lb 222,71 kg, on his 21st birthday. He weighed 31 st 5 lb 199 kg at the time of his death. His shoes were size 37AA (18½ in 47 cm long) and his hands measured 12¾ in 32,5 cm from the wrist to the tip of the middle finger (*cf.* the depth of this page at 11¼ in 28,6 cm).

His arm span was 9 ft 5¾ in 288 cm and his peak daily consumption attained 8000 calories. At the age of 9 he was able to carry his father, Harold F. Wadlow (d. Sept 1967) later Mayor of Alton, who stood 5 ft 11 in 182 cm and weighed 170 lb 72 kg, up the stairs of the family home. His last words were 'The doctor says I

won't get home for the . . . celebrations' (a reference to his paternal grandparents golden wedding).

The only other men for whom heights of 8 ft 244 cm or more have been reliably reported are the ten listed right. In seven cases, gigantism was followed by acromegaly, a disorder which causes

below: Britain's tallest twins, David and John Moore of Erith, Kent (see p. 11).

bottom: Dan and Doug Busch of Flagstaff, Arizona, the world's tallest twins who are 2¾ in 6,9 cm taller than the British pair above (see p. 11).



an enlargement of the nose, lips, tongue, lower jaw, hands and feet, due to renewed activity by an already swollen pituitary gland, which is located at the base of the brain.

John F. Carroll (1932–69) of Buffalo, New York State, USA ⁽¹⁾ 8 ft 7½ in 263,5 cm.

John William Rogan (1871–1905), a Negro of Gallatin, Tennessee, USA ⁽²⁾ 8 ft 6 in 259,1 cm.

Muhammad Alam Channa (b. 1956–fl. 1982) of Sehwan Sharif, Pakistan ⁽³⁾ 8 ft 3 in 251,4 cm.

Don Koehler (1925–81) of Denton, Montana, USA ⁽⁴⁾ 8 ft 2 in 248,9 cm, latterly lived in Chicago.

Bernard Coyne (1897–1921) of Anthon, Iowa USA ⁽⁵⁾ 8 ft 2 in 248,9 cm

Väinö Myllyrinne (1909–63) of Helsinki, Finland ⁽⁶⁾ 8 ft 1.2 in 247 cm.

Patrick Cotter O'Brien (1760–1806) of Kinsale, County Cork, Ireland ⁽⁷⁾ 8 ft 1 in 246 cm.

'Constantine' (1872–1902) of Reutlingen, West Germany ⁽⁸⁾ 8 ft 0.8 in 245,8 cm.

Sulaimān 'Ali Nashnush (b. 1943–fl. 1982) of Tripoli, Libya ⁽⁹⁾ 8 ft 0.4 in 245 cm.

Gabriel Estevao Monjane (b. 1944–fl. 1982) of Monjacaze, Mozambique ⁽¹⁰⁾ c. 8 ft 0 in 243,8 cm.

- (1) Severe kypho-scoliosis (two dimensional spinal curvature). The figure represents his height with assumed normal spinal curvature, calculated from a standing height of 8 ft 0 in 244 cm, measured on 14 Oct 1959. His standing height was 7 ft 8¼ in 234 cm shortly before his death.
- (2) Measured in a sitting position. Unable to stand owing to ankylosis (stiffening of the joints through the formation of adhesions) of the knees and hips.
- (3) Started growing abnormally at the age of 10. Has been credited with heights up to 8 ft 6 in 259 cm.
- (4) Spinal curvature reduced his standing height to c. 7 ft 10 in 238,4 cm. He had a twin sister who is 5 ft 9 in 175 cm tall. His father was 6 ft 2 in 187 cm and his mother 5 ft 10 in 177 cm.
- (5) Eunuchoidal giant (Daddy long-legs syndrome). Rejected by Army in 1918 when 7 ft 9 in 236 cm.
- (6) Stood 7 ft 3½ in 222 cm at the age of 21 years. Experienced a second phase of growth in his late thirties and may have stood 8 ft 3 in 251 cm at one time.
- (7) Revised height based on skeletal remeasurement in 1975.
- (8) Eunuchoidal. Height estimated, as both legs were amputated after they turned gangrenous. He claimed a height of 8 ft 6 in 259 cm.
- (9) Operation in Rome to correct abnormal growth was successful in 1960.
- (10) Eunuchoidal. Measured 7 ft 5 in 226 cm at the age of 16 and 7 ft 10 in 238,7 cm in Dec 1965. Has not been anthropometrically assessed since joining a Portuguese circus (billed height 265 cm 8 ft 8½ in).

A table of the tallest giants of all-time in the 31 countries with men taller than 7 ft 4 in 223,5 cm was listed in the 15th edition of the *Guinness Book of Records* (1968) at page 9.

The tallest known living human is Muhammad Alam Channa (b. 1956), who works as an attendant at the shrine of Lal Shahbaz Qalandar in Pakistan. He began growing abnormally from the age of 12 and reached a height of 7 ft 231 cm by the age of 20. He is now 8 ft 3 in 251 cm and weighs more than 180 kg 28 st 5 lb.

England

The tallest Englishman ever recorded was William Bradley (1787–1820), born in Market Weighton, Humberside. He stood 7 ft 9 in 236 cm. John Middleton (1578–1623), the famous Childe of Hale, from near Liverpool, was credited with a height of 9 ft 3 in 282 cm but a life-size impression of his right hand (length 11½ in 29,2 cm, cf. Wadlow's 12¾ in 32,4 cm) painted on a panel in Brasenose College, Oxford indicates his true stature was nearer 7 ft 8 in 233,3 cm. James Toller (1795–1819) of St Neots, Cambridgeshire was alleged to be 8 ft 6 in 259 cm but was actually 7 ft 6 in 229 cm. Albert Brough (1871–1919), a publican of Nottingham, reached a height of 7 ft 7½ in 232 cm. Frederick Kempster (1889–1918) of Bayswater, London, was reported to have measured 8 ft 4½ in 255 cm at the time of his death, but photographic evidence suggests that his height was 7 ft 8½ in 235 cm. He measured 234 cm 7 ft 8.1 in in 1913. Henry Daglish, who stood 7 ft 7 in 231 cm, died in Upper Stratton, Wiltshire, on 16 March 1951, aged 25. The much-publicised Edward (Ted) Evans (1924–58) of Englefield Green, Surrey, was reputed to be 9 ft 3 in 282 cm but actually stood 7 ft 8½ in 235 cm. The tallest fully mobile man now living in Great Britain is Christopher Paul Greener (b. New Brighton, Merseyside, 21 Nov 1943) of Hayes, Kent, who measures 7 ft 6¼ in 229 cm. (weight 26 st 165 kg). Terence Keenan (b. 1942) of Rock Ferry, Merseyside measured 7 ft 6 in 229 cm in 1968, but is confined to a wheelchair owing to a leg condition. His abnormal growth began at the age of 17 when he was only 5 ft 4 in 163 cm tall.

Scotland

The tallest Scotsman, and the tallest recorded 'true' (non-pathological) giant, was Angus Macaskill (1825–63), born on the island of Berneray, in the Sound of Harris, in the Western Isles. He stood 7 ft 9 in 236 cm and died in St Anns', on Cape Breton Island, Nova Scotia, Canada. Lambert Quételet (1796–1874), a Belgian anthropometrist, considered that a Scotsman named MacQuail, known as 'the Scotch Giant', stood 8 ft 3 in 251 cm. He served in the famous regiment of giants of Frederick William I (1688–1740), King of Prussia. His skeleton, now in the Staatliche Museum zu Berlin, East Germany, measures 220 cm 7 ft 2.6 in. Sam McDonald (1762–1802) of Lairg in Sutherland, was reputed to be 8 ft 244 cm tall but actually stood 6 ft 10 in 208 cm. William Olding (b. 1914–fl. 1942) of Glasgow measured 7 ft 6½ in 230 cm (weight 366 lb 166 kg). The tallest Scotsman now living is George Gracie (b. 1938) of Forth, Strathclyde. He stands 7 ft 3 in 221 cm and weighs 28 st 178 kg. His brother Hugh (b. 1941) is 7 ft 0½ in 215 cm.

Wales

The tallest Welshman on record was William Evans (1599–1634) of Monmouthshire, who was porter to King James I. He stood 7 ft 6 in 228,2 cm.

Ireland

The tallest Irishman was Patrick Cotter O'Brien (1760–1806), born in Kinsale, County Cork. He died at Hotwells, Bristol (See Table left). The tallest Irishman now living is believed to be Jim Cully (b. 1926) of Tipperary, a former boxer and wrestler. He stands 7 ft 2 in 218 cm.

Twins

The tallest twins (identical) ever recorded were the Knipe brothers (b. 1761–fl. 1780) of Magherafelt, near Londonderry, Northern Ireland, who both measured 7 ft 2 in 218,4 cm. The world's tallest living twins (also identical) are Dan and Doug Busch (b. 12 Aug 1961) of Flagstaff, Arizona, USA who both measure 6 ft 11 in 210,8 cm. Britain's tallest twins are the 6 ft 8¼ in 203,6 cm tall David and John Moore (b. 29 Mar 1963) of Erith, Kent.

TALLEST GIANTESSES

World All-time

Giantesses are rarer than giants but their heights are still spectacular. The tallest woman in history was the acromegalic giantess Zeng Jinlian (pronounced San Chung Lin) (b. 26 June 1964) of Yujiang village in the Bright Moon Commune, Hunan Province, central China, who was 8 ft 1 in 246,3 cm when she died on 13 Feb 1982. She began to grow abnormally from the age of 4 months and stood 156 cm 5 ft 1½ in before her 4th birthday and 217 cm 7 ft 1½ in when she was 13. Her hands measure 25,5 cm 10 in and her feet 35,5 cm 14 in in length. She suffered from both scoliosis and diabetes. Her parents are 163 cm 5 ft 4½ in and 156 cm 5 ft 1½ in while her brother was 158 cm 5 ft 2½ in aged 18.

United Kingdom

The tallest woman in British medical history has been Jane ('Ginny') Bunford, born on 26 July 1895 at Bartley Green, Northfield, West Midlands, England. Her abnormal growth started at the age of 11 following a head injury, and on her 13th birthday she measured 6 ft 6 in 198 cm. Shortly before her death on 1 April 1922 she stood 7 ft 7 in 231 cm tall, but she had severe kyphoscoliosis and would have measured about 7 ft 11 in 241 cm with assumed normal spinal curvature. Her skeleton, now preserved in the Anatomical Museum in the Medical School at Birmingham University, has a mounted height of 7 ft 4 in 223,5 cm.

Living

The tallest living woman is Sandy Allen (b. 18 June 1955, Chicago) of Niagara Falls, Ontario, Canada. On 14 July 1977 she underwent a pituitary gland operation, which uninhibited further growth at 7 ft 7¼ in 231,7 cm. A 6½ lb 2,91 kg baby, her acromegalic growth began soon after birth. She now weighs 33 st 209,5 kg and takes a size 16EEE American shoe (=14½ UK or 50PP Continental).

Tallest Couple

Anna Hanen Swan (1846–88) of Nova Scotia, Canada, was billed



The Canadian giantess, Anna Hanen Swan, who measured 7 ft 5½ in 227 cm. She married Martin van Buren Bates in London in 1871 (not shown here). He stood 7 ft 2½ in 220 cm thus they became the tallest married couple of all time. (Gary Doidge)

at 8 ft 1 in 246 cm but actually measured 7 ft 5½ in 227 cm. In London on 17 June 1871 she married Martin van Buren Bates (1845–1919) of Whitesburg, Letcher County, Kentucky, USA, who stood 7 ft 2½ in 220 cm making them the tallest married couple on record.

SHORTEST DWARFS

The strictures which apply to giants apply equally to dwarfs, except that exaggeration gives way to understatement. In the same way as 9 ft 274 cm may be regarded as the limit towards which the tallest giants tend, so 23 in 58 cm must be regarded as the limit towards which the shortest mature dwarfs tend (cf. the average length of new-born babies is 18–20 in 46–50 cm). In the case of child dwarfs their ages are often enhanced by their agents or managers.

There are many forms of human dwarfism, but those suffering from ateleiosis (midgets) are generally the shortest. They have essentially normal proportions but suffer from growth hormone deficiency. Such dwarfs tended to be even shorter at a time when human stature was generally shorter due to lower nutritional standards.

World All-time

The shortest mature human of whom there is independent evidence was Pauline Musters ('Princess Pauline'), a Dutch midget. She was born at Ossendrecht, on 26 Feb 1876 and measured 30 cm 12 in at birth. At the age of 9 she was 55 cm 21.65 in tall and weighed only 1.5 kg 3 lb 5 oz. She died, at the age of 19, of pneumonia, with meningitis, her heart weakened from alcoholic excesses, on 1 Mar 1895 in New York City, NY, USA. Although she was billed at 48 cm 19 in, she had earlier been medically measured to be 59 cm 23.2 in tall. A *post mortem* examination showed her to be exactly 61 cm 24 in (there was some elongation after death). Her mature weight varied from 3.4–4 kg 7½–9 lb and her 'vital statistics' were 47–48–43 cm 18½–19–17 in, which suggests she was overweight.

In 1938 a height of 19 in 48 cm was attributed to Paul Del Rio

(b. Madrid, Spain, 1920) by *Life Magazine* when he visited Hollywood, but the fact he created no 'fuss' in the film capital and weighed as much as 12 lb 5.4 kg suggests that he was closer to 26 in 66 cm tall.

In 1979 a height of 50 cm 19.68 in and a weight of 4 lb 6 oz 1.98 kg were reported for a nine-year-old Greek girl named Stamatoula being cared for at the Lyrion Convent, Athens. The child, believed to be the survivor of twins, is suffering from Seckel's 'bird-face' syndrome and growth has allegedly ceased, but in a similar case from Corsica the girl eventually reached a height of 34 in 86.3 cm and a weight of 26 lb 11.8 kg.

Male All-time

The shortest recorded adult male dwarf was Calvin Phillips, born on 14 Jan 1791 in Bridgewater, Massachusetts, USA. He weighed 2 lb 907 g at birth and stopped growing at the age of 5. When he was 19 he measured 26½ in 67 cm tall and weighed 12 lb 5.4 kg with his clothes on. He died two years later, in April 1812, from progeria, a rare disorder characterised by dwarfism and premature senility.

The most famous midget in history was Charles Sherwood Stratton, *alias* 'General Tom Thumb', born on 4 Jan 1838. When he got into the clutches of the circus proprietor Mr. Barnum his birth date was changed to 4 Jan 1832 so that when billed at 30½ in 77 cm at the age of 18 he was in fact 12. He died in his birthplace of Bridgeport, Connecticut, USA of apoplexy on 15 July 1883 aged 45 (not 51) and was 3 ft 4 in 102 cm.

Another celebrated midget was Józef ('Count') Boruwalaski (b. November 1739) of Poland. He measured only 8 in 20 cm long at birth, growing to 14 in 36 cm at the age of 1 year. He stood 17 in 43 cm at 6 years, 21 in 53 cm at 10, 25 in 64 cm at 15, 35 in 89 cm at 25 and 39 in 99 cm at 30. He died near Durham, England, on 5 Sept 1837, aged 97.

William E. Jackson, *alias* 'Major Mite', born on 2 Oct 1864 in Dunedin, New Zealand, measured 9 in 23 cm long and weighed 12 oz 340 g at birth. In November 1880 he stood 21 in 53 cm and weighed 9 lb 4 kg. He died in New York City, NY, USA, on 9 Dec 1900, when he measured 27 in 70 cm.

Living

The world's shortest recently living adult human was Nruturam (b. 28 May 1929) a rachitic dwarf of Naydwar, India, who measured 28 in 71 cm but was reported dead in 1981. Antonio Ferreira (b. Arcozelo, Portugal, 1943) an ateliotic dwarf drummer is reputedly 75 cm 29½ in tall.

United Kingdom

The shortest mature human ever recorded in Britain was Miss Joyce Carpenter (b. 21 Dec 1929), a rachitic dwarf of Charford, Hereford and Worcester, who stood 29 in 74 cm tall and weighed 30 lb 13.60 kg. She died on 7 Aug 1973 aged 43. Hopkins Hopkins (1737–54) of Llantrisant, Mid Glamorgan was 31 in 79 cm. Hopkins, who died from progeria weighed 19 lb 8.62 kg at the age of 7 and 13 lb 6 kg at the time of his death. There are an estimated 2000 people of severely restricted growth, (i.e. under 4 ft 8 in 142 cm), living in Britain today.

The shortest adult living in Britain is Michael Henbury-Ballan (b. 26 Nov 1958) of Bassett, Southampton, who is 37 in 94 cm tall and weighs 5½ st 35 kg. A 5 lb 14 oz 2.66 kg baby, he stopped growing at the age of 13 years. His fraternal twin brother Malcolm is 5 ft 9 in 175 cm tall and weighs 11 st 7 lb 73 kg.

Twins shortest

The shortest twins ever recorded were the primordial dwarfs Matjus and Bela Matina (b. 1903–fl. 1935) of Budapest, Hungary who later became naturalized Americans. They both measured 30 in 76 cm. The world's shortest living twins are John and Greg Rice (b. 1952) of Palm Beach, Florida, USA who both measure 34 in 86.3 cm.

Oldest

There are only two centenarian dwarfs on record. The first was Miss Anne Clowes of Matlock, Derbyshire, who died on 5 Aug 1784 aged 103 years. She was 3 ft 9 in 114 cm tall and weighed

48 lb 21.7 kg. On 6 Apr 1982 Hungarian-born Miss Susanna Bokonyi ('Princess Susanna') of Newman, New Jersey, USA celebrated her 103rd birthday. She is 3 ft 4 in 101 cm tall and weighs 37 lb 16.78 kg.

Most variable stature

Adam Rainer, born in Graz, Austria, in 1899, measured 118 cm 3 ft 10.45 in at the age of 21. But then he suddenly started growing at a rapid rate, and by 1931 he had reached 218 cm 7 ft 1 1/4 in. He became so weak as a result that he was bed-ridden for the rest of his life. He died on 4 March 1950 aged 51. He measured 234 cm 5 ft 8 in and was the only person in medical history to have been both a giant and a dwarf.

TRIBES

Tallest

The tallest major tribe in the world is the Tutsi (also Watussi), Nilotic herdsmen of Rwanda and Burundi, Central Africa whose young adult males average 180 cm 5 ft 10 3/4 in. The Tehuelches of Patagonia, long regarded as of gigantic stature (i.e. 7-8 ft 213-244 cm), have in fact an average height (males) of 5 ft 10 in 178 cm. The Montenegrins of Yugoslavia, with a male average of 5 ft 10 in 178 cm (in the town of Trebinje the average height is 6 ft 183 cm), compares with the men of Sutherland, at 5 ft 9 1/2 in 176.5 cm. In 1912 the average height of the men living in Balma-clellan, in the Kircudbright district of Dumfries and Galloway was reported to be 5 ft 10.4 in 179 cm.

Shortest

The smallest pygmies are the Mbuti, with an average height of 4 ft 6 in 137 cm for men and 4 ft 5 in 135 cm for women, with some groups averaging only 4 ft 4 in 132 cm for men and 4 ft 1 in 124 cm for women. They live in the forests near the river Ituri in Zaire, Africa.

WEIGHT

Heaviest men World

The heaviest human in medical history has been Jon Brower Minnoch (b. 29 Sept 1941) of Bainbridge Island, Washington, USA, who was carried on planking by a rescue team into the University Hospital, Seattle in March 1978. Dr. Robert Schwartz, the endocrinological consultant, estimated by extrapolating his intake and elimination rates that he was 'probably more' than 1400 lb 635 kg (100 st). To roll him over in his hospital bed it took 13 attendants. After nearly 2 years on a 1200 calorie per day diet he was discharged at 476 lb 216 kg (34 st). He had to be readmitted in October 1981 having reportedly gained 200 lb 91 kg (over 14 st) in 7 days. This former taxi-cab driver stood 6 ft 1 in 1.85 m tall. He was 400 lb 180 kg in 1963, 700 lb 315 kg in 1966 and about 975 lb 440 kg in late 1976.

Great Britain

The heaviest recorded man in Great Britain was William Campbell, who was born in Glasgow in 1856 and died on 16 June 1878, when a publican at High Bridge, Newcastle upon Tyne, Tyne and Wear. He was 6 ft 3 in 191 cm tall and weighed 53 st 8 lb 340 kg with an 85-in 216 cm waist and a 96-in 244 cm chest. His coffin weighed 1500 lb 680 kg. He was 'a man of considerable intelligence and humour'. The only other British man with a recorded weight of more than 50 st 317.5 kg was the celebrated Daniel Lambert (1770-1809) of Leicester. He stood 5 ft 11 in 180 cm tall, weighed 52 st 11 lb 335 kg shortly before his death and had a girth of more than 92 in 234 cm.

The highest weight attained by any man living in Britain today was that of Eric Keeling (b. 1933) of Islington, Greater London who scaled 47 st 299 kg in mid-1971. An 11 lb 5 kg baby he weighed 18 st 114.5 kg at the age of 13. By November 1973 he had reduced by dieting (600 calories per day) to 33 st 210 kg. He is 6 ft 5 in 195.5 cm tall.

Britain's heaviest men are now the 6 ft 3 in 190.5 cm Jack Taylor (b. 1950) of Bradford, Yorkshire, and the 6 ft 11 in 210.8 cm tall professional wrestler Luke McMasters ('Giant Haystacks') of Salford, Lancashire, both of whom fluctuate between 38 st 241 kg and 40 st 254 kg.

Ireland

The heaviest Irishman is reputed to have been Roger Byrne,

The only other men for whom weights of more than 60 st (840 lb) 381 kg have been reported are the eight listed below:

	lb	st	lb	kg
Michael Walker né Francis Lang (b. 1934) USA (6 ft 2 in 188 cm) ¹	1187	84	11	538
Robert Earl Hughes (1926-58) USA (6 ft 0 1/2 in 184 cm)	1069	76	5	485
Mills Darden (1798-1857) USA (7 ft 6 in 229 cm)	1020	72	12	463
John Hanson Craig (1856-94) USA (6 ft 5 in 195 cm) ²	907	64	11	411
Arthur Knorr (1914-60) USA (6 ft 1 in 185 cm) ³	900	64	4	408
Toubi (b. 1946) Cameroon	857 1/2	61	3 1/2	389
T. J. Albert (b. 1957) St. Albans, W. Virginia, USA ⁴	856	61	2	388
T. A. Valenzuela (1895-1937) Mexico (5 ft 11 in 180 cm)	850	60	10	386

¹ Reduced to 369 lb 167 kg by Feb. 1980. Peak weight was only estimated in 1971.

² Won \$1000 in a 'Bonny Baby' contest in New York City in 1858.

³ Gained 300 lb 136 kg in the last 6 months of his life.

⁴ A French press report attributed a weight of 470 kg 1036 lb to him in 1979.

who was buried in Rosenallis, County Laoighis (Leix), on 14 Mar 1804. He died in his 54th year and his coffin and its contents weighed 52 st 330 kg. Another Irish heavyweight was Lovelace Love (1731-66), born in Brook Hill, County Mayo. He weighed 'upward of 40 st 254 kg' at the time of his death.

Heaviest women World

The heaviest woman ever recorded was the late Mrs Percy Pearl Washington, 46 who died in a hospital in Milwaukee, on 9 Oct 1972. The hospital scales registered only up to 800 lb (57 st 2 lb) 362.8 kg but she was believed to weigh about 880 lb (62 st 12 lb) 399.1 kg. The previous feminine weight record had been set 84 years earlier at 850 lb (60 st 10 lb) 386 kg although a wholly unsubstantiated report exists of a woman Mrs Ida Maitland (1898-1932) of Springfield, Mississippi, USA, who reputedly weighed 65 st 1 lb (911 lb) 413.2 kg.

A more reliable and better documented case was that of Mrs Flora Mae Jackson (née King), a 5 ft 9 in 175 cm Negress born in 1930 at Shuqualak, Mississippi, USA. She weighed 10 lb 4.5 kg at birth, 19 st 1 lb (267 lb) 121 kg at the age of 11, 44 st 5 lb (621 lb) 282 kg at 25 and 60 st (840 lb) 381 kg shortly before her death in Meridian, Mississippi, on 9 Dec 1965. She was known in show business as 'Baby Flo'.

Great Britain and Ireland

The heaviest woman ever recorded in Great Britain was Mrs Muriel Hopkins (b. 1931) of Tipton, West Midlands who weighed 43 st 11 lb 278 kg (height 5 ft 11 in 180 cm) in 1978. Shortly before her death on 22 Apr 1979 she reportedly scaled 52 st 330 kg, but this was only an estimate and her actual weight was believed to have been about 47 1/2 st 301 kg. Her coffin measured 6 ft 3 in 190 cm in length, 4 ft 6 in 137 cm wide and 3 ft 91 cm deep. The heaviest weight of a woman living in Britain today was that of Miss Jean Renwick (b. 1939) of Brixton, London, who weighed 40 st 2 lb 254 kg (height 5 ft 3 1/2 in 161 cm) in January 1972. Since dieting her lowest weight has been 22 st 2 lb 141 kg.

Heaviest twins

The heaviest twins in the world were Billy Leon (1946-79) and Benny Loyd (b. 7 Dec 1946) McCrary alias McGuire of Hendersonville, North Carolina, USA, who in November 1978 were weighed at 743 lb 337 kg (Billy) and 723 lb 328 kg (Benny) and had 84 in 213 cm waists. As professional tag wrestling performers they were billed at weights up to 770 lb 349 kg. After one 6 week strict slimming course in a hospital, they emerged weighing 51 lb 2.26 kg more. Billy died at Niagara Falls, Ontario, Canada on 13 July 1979 after a mini-motorcycle accident.

Lightest World

The lightest adult human on record was Lucia Zarate (b. San Carlos, Mexico 2 Jan 1863, d. October 1889), an emaciated

Mexican anolemic dwarf of 26½ in 67 cm, who weighed 2,125 kg 4.7 lb at the age of 17. She 'fattened up' to 13 lb 5.9 kg by her 20th birthday. At birth she weighed 2½ lb 1.1 kg. The lightest adult ever recorded in the United Kingdom was Hopkins Hopkins (Shortest dwarfs, see p. 12).

The thinnest recorded adults of normal height are those suffering from Simmonds' Disease (Hypophyseal cachexia). Losses up to 65 per cent of the original body-weight have been recorded in females, with a 'low' of 3 st 3 lb 20 kg in the case of Emma Shaller (b. St Louis, Missouri 8 July 1868, d. 4 Oct 1890), who stood 5 ft 2 in 157 cm. Edward C. Hagner (1892–1962), alias Eddie Masher (USA) is alleged to have weighed only 3 st 6 lb 22 kg at a height of 5 ft 7 in 170 cm. He was also known as 'the Skeleton Dude'. In August 1825 the biceps measurement of Claude-Ambroise Seurat (b. 10 Apr 1797, d. 6 Apr 1826) of Troyes, France was 4 in 10 cm and the distance between his back and his chest was less than 3 in 8 cm. According to one report he stood 5 ft 7½ in 171 cm and weighed 5 st 8 lb 35 kg, but in another account was described as 5 ft 4 in 163 cm and only 2 st 8 lb 16 kg. It was recorded that the American exhibitionist Rosa Lee Plemons (b. 1873) weighed 27 lb 12 kg at the age of 18. In March 1978 the death was reported of an anorexic 47-year-old woman in Hounslow, Middx, who scaled only 4 st 3 lb 26.7 kg (height 5 ft 2 in 157 cm).

In February 1981 a weight of 3 st 12 lb 24.5 kg was recorded for a 31-year-old woman suffering from what is known as the 'total allergy syndrome' (aversion to anything that has a synthetic base).

Lightest Great Britain

Robert Thorn (b. 1842) of March, Cambridgeshire weighed 49 lb 22 kg at the age of 32. He was 4 ft 6 in 137 cm tall and had a 27 in 68 cm chest (expanded) and 4½ in 11 cm biceps.

Slimming

The greatest recorded slimming feat was that of William J. Cobb (b. 1926), alias 'Happy Humphrey', a professional wrestler of Macon, Georgia, USA. It was reported in July 1965 that he had reduced from 57 st 4 lb 364 kg to 16 st 8 lb 105 kg, a loss of 40 st 10 lb 259 kg in 3 years. His waist measurement declined from 101 to 44 in 257 to 112 cm. In October 1973 it was reported that 'Happy' was back to his normal weight of 46½ st or 650 lb 295 kg. By July 1979 Jon Brower Minnoch (see p. 13) had reduced to 476 lb 216 kg (34 st); if the peak weight quoted for him was authentic, this indicates a weight loss of 924 lb 419 kg (66 st) in 16 months.

The US circus fat lady Mrs Celesta Geyer (b. 1901), alias Dolly Dimples, reduced from 553 lb 251 kg to 152 lb 69 kg in 1950–51, a loss of 401 lb 182 kg in 14 months. Her vital statistics diminished *pari passu* from 79–84–84 in 200–213–213 cm to a *svelte* 34–28–36 in 86–71–91 cm. Her book 'How I lost 400 lbs' was not a best-seller because of the difficulty of would-be readers identifying themselves with the dress-making problems of losing more than 28 st 178 kg when 4 ft 11 in 150 cm tall. In December 1967 she was reportedly down to 7 st 12 lb 50 kg. The speed record for slimming was established by Paul M. Kimelman, 21, of Pittsburgh, Pennsylvania, USA, who from 25 Dec 1966 to August 1967 went on a crash diet of 300–600 calories per day to reduce from 487 lb (34 st 11 lb) 215.9 kg to 130 lb (9 st 4 lb) 59 kg—a total loss of 357 lb (25 st 7 lb) 156.9 kg. He has now stabilised at 175 lb (12 st 7 lb) 79 kg. In February 1951 Mrs Gertrude Levandowski (b. 1893) of Burnips, Michigan, USA successfully underwent a protracted operation for the removal of a cyst which subsequently reduced her weight from 44 st 280 kg to 22 st 140 kg (See also p. 24).

Claude Halls (b. 1937) of Sible Hedingham, Essex reduced from 33 st 6¾ lb 212.6 kg to 12 st 10 lb 80.7 kg—a loss of 20 st 10¾ lb 131.8 kg—in the 14 months January 1974 to March 1975. In the first 7 days with Weight Watchers he lost 5 st 7 lb 35 kg.

The feminine Weight Watchers champion in Britain was Mrs Dolly Wager (b. 1933) of Charlton, London, who, between September 1971 and 22 May 1973 reduced from 31 st 7 lb 197 kg to 11 st 69.8 kg so losing 20 st 7 lb 130 kg.

Weight gaining

A probable record for gaining weight was set by Arthur Knorr (b. 17 May 1914), who died on 7 July 1960, aged 46, in Reseda, California, USA. He gained 21 st 6 lb 136 kg in the last 6 months of his life and weighed 64 st 4 lb 408 kg when he died. Miss Doris James of San Francisco, California, USA is alleged to have gained 23 st 3 lb 147 kg in the 12 months before her death in August 1965, aged 38, at a weight of 48 st 3 lb 306 kg. She was only 5 ft 2 in 157 cm tall.

Greatest differential

The greatest weight differential recorded for a married couple is 65 st 12 lb 419 kg in the case of Mills Darden (72 st 12 lb 463 kg—see p. 13) and his wife Mary (7 st 44.5 kg). Despite her diminutiveness, however, Mrs Darden bore her husband 3 (perhaps 5) children before her death in 1837.

2. ORIGINS

EARLIEST MAN

SCALE OF TIME

If the age of the Earth-Moon system (latest estimate at least 4700 million years) is likened to a single year, *Handy Man* appeared on the scene at about 8.35 p.m. on 31 December, Britain's earliest known inhabitants arrived at about 11.27 p.m., the Christian era began about 13 seconds before midnight and the life span of a 117-year-old person (pp. 16 & 17) would be about three-quarters of a second. Present calculations indicate that the Sun's increased heat, as it becomes a 'red giant', will make life insupportable on Earth in about 10,000 million years. Meanwhile there may well be colder epicycles. The period of 1000 million years is sometimes referred to as an aeon.

Man (*Homo sapiens*) is a species in the sub-family Homininae of the family Hominidae of the super-family Hominoidea of the sub-order Simiae (or Anthropoidea) of the order Primates of the infra-class Eutheria of the sub-class Theria of the class Mammalia of the sub-phylum Vertebrata (Craniata) of the phylum Chordata of the sub-kingdom Metazoa of the animal kingdom.

Earliest Primate

The earliest known primates appeared in the Palaeocene period of about 80,000,000 years ago. The sub-order of higher primates, called Simiae (or Anthropoidea) evolved from the catarrhine or old-world sect more than 40,000,000 years later in the Lower Oligocene period. During the Middle and Upper Oligocene the super-family Hominoidea emerged. This contains three accepted families, *viz* Hominidae (bipedal, ground-dwelling man or near man), Pongidae (brachiating forest apes) and Oreopithecidae. The earliest known hominoid (man-like) fossil found is the *Oligopithecus savagei* found in El Faiyum, Egypt and dated to c. 33 million years ago.

Earliest Hominid (Near Man)

The characteristics of the Hominidae, such as a large brain, very fully distinguish them from any of the other Hominoidea. Evidence published in August 1969 indicated that *Ramapithecus*, discovered by G. Edward Lewis at Siwalik Hills, northern India in 1932 can be dated from 8 to 13 million years ago.

Earliest Genus Homo (True Man)

The greatest age attributed to fossils of the genus *Homo* is for the remains of 8 adults and 3 children discovered in the summer of 1975 at Laetoli, Tanzania by Dr Mary Leakey and dated by the University of California, Berkeley to between 3,350,000 and 3,750,000 BC. An arm bone fragment from Kanapoi has been tentatively regarded as from *Homo* and has been dated c. 4 million years ago.

The most complete of the earliest skeletons of *Homo* is that of 'Lucy' (40 per cent complete) found by Dr Donald C. Johanson and named *Australopithecus afarensis* found in the Afar region of Ethiopia in November 1974 dating 3–4 million years BC.

Parallel tracks of hominid footprints extending over 25 m 80 ft were discovered at Laetoli, Tanzania in 1978 in volcanic ash dating to 3.5 million years ago. The height of the smallest of the seemingly 3 beings was estimated to be 4 ft 7 in 120 cm.

The earliest evidence of the use of fire by hominids is from a site found in 1978 at Chesowanja, near Lake Baringo, Kenya dated to 1.42 million years ago.

Earliest *Homo sapiens*

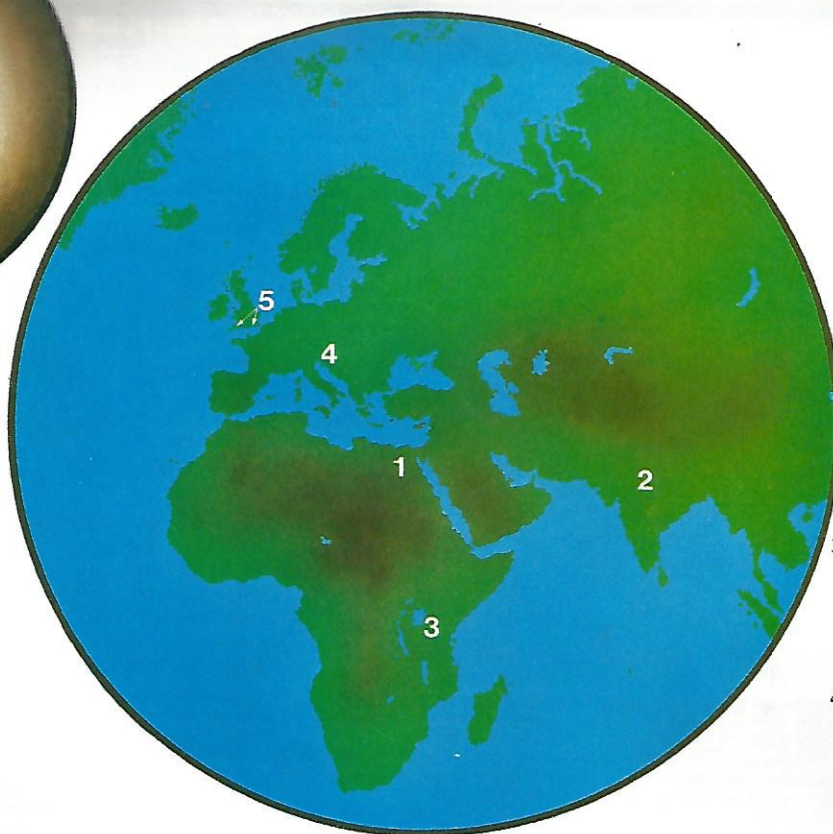
The earliest recorded remains of the species *Homo sapiens*, variously dated from 300,000 to 450,000 years ago in the Middle Pleistocene, were discovered on 24 Aug 1965 by Dr László

The Origins of Man



5. Earliest evidence of *Homo erectus* in Great Britain found at Westbury-sub-Mendip, Somerset, dated 400,000–500,000 BC.

Oldest human remains ever found in Britain at Barnfield Pit near Swanscombe, northern Kent in 1935 and 1936 and in Pontnewydd Cave, Elwy Valley, Clwyd, Wales in 1980. These dated to c. 200,000 BC.



1. Earliest known Hominoid (man-like) fossil (*Oligopithecus savagei*) found in El Faiyum, Egypt, from c. 33 million years ago.
2. Earliest Hominid (near man) (*Ramapithecus*) discovered in 1932 in the Siwalik Hills, Northern India dating from 8 to 13 million years ago.
3. Earliest Genus Homo (true man) fossil remains of 8 adults and 3 children discovered in 1975 at Laetoli, Tanzania dated c. 3,550,000 BC.
4. Earliest *Homo Sapiens* discovered in 1965 at Vértesszöllös 30 miles 48 km west of Budapest, Hungary, dated from 300,000 to 450,000 years ago.

Vértess in a limestone quarry at Vértesszöllös, about 30 miles west of Budapest, Hungary. The remains, designated *Homo sapiens palaeo-hungaricus*, comprised an almost complete occipital bone, part of a skull with an estimated cranial capacity of nearly 1400 cm³ 85 in³.

The earliest evidence for the presence of man in the Americas could date from at least 50,000 BC or 'more probably 100,000 BC' according to the late Dr Leakey after the examination of some hearth stones found in the Mojave Desert, California announced in October 1970. The earliest human relic is a skull found in the area of Los Angeles, California dated in December 1970 to be from 22,000 BC.

Great Britain

The earliest evidence for the presence of humans in Great Britain dates from the time of the Cromerian interglacial (400,000–500,000 BC). Five worked flint artefacts of this period were found in deposits of this interglacial in a quarry near Westbury-sub-Mendip, Somerset, and described in 1975 by Michael J. Bishop. The oldest human remains ever found in Britain are pieces of a brain case from a specimen of *Homo sapiens fossilis*, believed to be a woman, recovered in June 1935 and March 1936 by Dr Alvan T. Marston from the Boyn Hill terrace in the Barnfield Pit, near Swanscombe, northern Kent. This find is attributed to Acheulian man, type III or IV, dating from the Hoxnian interglacial period of c. 200,000 BC. A hominid tooth, mandible fragment and vertebra were found in Pontnewydd Cave, Lower Elwy Valley, North Wales in October 1980. They were dated by the Thorium/Uranium method to between 175,000 and 200,000 BC.

3. LONGEVITY

No single subject is more obscured by vanity, deceit, falsehood and deliberate fraud than the extremes of human longevity. Extreme claims are generally made on behalf of the very aged rather than by them.

Many hundreds of claims throughout history have been made for persons living well into their second century and some, insulting to the intelligence, for people living even into their third. Centenarians surviving beyond their 110th year are in fact of the extremest rarity and the present absolute proven limit of human longevity does not yet admit of anyone living to celebrate any birthday after their 117th.

The most reliably pedigreed large group of people in the world, the British peerage, has, after ten centuries, produced only two centenarian peers, but only one reached his 101st birthday. However, this is possibly not unconnected with the extreme draughtiness of many of their residences and the amount of lead in their game. In the 30 year period 1950–1979 the deaths of 6 men and 10 women were recorded in England and Wales aged 110, 111 and in one case 112 (see Table). The 1971 Census showed 65 citizens of 108 and over.

Scientific research into extreme old age reveals that the correlation between the claimed density of centenarians in a country and its regional illiteracy is 0.83 ± 0.03 . In late life, very old people often tend to advance their ages at the rate of about 17 years per decade. This was nicely corroborated by a cross analysis of the 1901 and 1911 censuses of England and Wales. Early claims must necessarily be without the elementary corroboration of birth dates. England was among the earliest of all countries to introduce compulsory local registers (September 1538) and official birth registration (1 July 1837) which was made fully compulsory only in 1874. Even in the United States, 45 per cent of births occurring between 1890 and 1920 were unregistered.

Several celebrated super-centenarians (over 110 years) are believed to have been double lives (father and son, relations with the same names or successive bearers of a title). The most famous example is Christian Jakobsen Drackenberg allegedly born in Stavanger, Norway on 18 Nov 1626 and died in Aarhus, Denmark aged seemingly 145 years 326 days on 9 Oct 1772. A number of instances have been commercially sponsored, while a

AUTHENTICATED NATIONAL LONGEVITY RECORDS

	Years	Days		Born	Died
Japan	117	—	Shigechiyo Izumi	29 June 1865	fl. 29 June 1982
United States ¹	113	273	Fannie Thomas	24 Apr 1867	22 Jan 1981
Canada ²	113	124	Pierre Joubert	15 July 1701	16 Nov 1814
Spain ³	112	228	Josefa Salas Mateo	14 July 1860	27 Feb 1973
France	112	66	Augustine Teissier (Sister Julia)	2 Jan 1869	9 Mar 1981
United Kingdom ⁴	112	39	Alice Stevenson	10 July 1861	18 Aug 1973
Morocco	> 112	—	El Hadj Mohammed el Mokri (Grand Vizier)	1844	16 Sept 1957
Poland	112	+	Roswila Mielczarak (Mrs)	1868	7 Jan 1981
Ireland	111	327	The Hon. Katherine Plunket	22 Nov 1820	14 Oct 1932
Australia	111	235	Jane Percy (Mrs)	2 Sept 1869	3 May 1981
South Africa ⁵	111	151	Johanna Booyson	17 Jan 1857	16 June 1968
Czechoslovakia	111	+	Marie Bernatková	22 Oct 1857	fl. Oct 1968
Channel Islands (Guernsey)	110	321	Margaret Ann Neve (née Harvey)	18 May 1792	4 April 1903
Northern Ireland	110	234	Elizabeth Watkins (Mrs)	10 Mar 1863	31 Oct 1973
Yugoslavia	110	150+	Demitrius Philipovitch	9 Mar 1818	fl. Aug 1928
Netherlands ⁶	110	141	Gerada Hurenkamp-Bosgoed	5 Jan 1870	25 May 1980
Greece	110	+	Lambrini Tsioura (Mrs)	1870	19 Feb 1981
USSR ⁷	110	+	Khasako Dzugayev	7 Aug 1860	fl. Aug 1970
Norway	109	208	Marie Olsen (Mrs)	1 May 1850	24 Nov 1959
Tasmania (State of)	109	179	Mary Ann Crow (Mrs)	2 Feb 1836	31 July 1945
Sweden	109	94	Anna Mathilda Johansson	21 Nov 1865	23 Feb 1975
Italy	109	179	Rosalie Spoto	25 Aug 1847	20 Feb 1957
Scotland	109	14	Rachel MacArthur (Mrs)	26 Nov 1827	10 Dec. 1936
Belgium	108	327	Mathilda Vertommen-Helleman	12 Aug 1868	4 July 1977
Germany ⁸	108	128	Luise Schwarz	27 Sept 1849	2 Feb 1958
Iceland	108	45	Halldóra Bjarnadóttir	14 Oct 1873	28 Nov 1981
Portugal ⁹	108	+	Maria Luisa Jorge	7 June 1859	fl. July 1967
Finland	107	221	Amalia Wallenius (Mrs)	6 Aug 1867	24 Mar. 1975
Austria	106	231	Anna Migschitz	3 Feb 1850	1 Nov 1956
Malaysia	106	+	Hassan Bin Yusoff	14 Aug 1865	fl. Jan 1972
Isle of Man	105	221	John Kneen	12 Nov 1852	9 June 1958

¹ Ex-slave Mrs Martha Graham died at Fayetteville, North Carolina on 25 June 1959 reputedly aged 117 or 118. Census researches by Eckler show that she was seemingly born in Dec 1844 and hence aged 114 years 6 months. Mrs Rena Glover Brailsford died in Summerton, South Carolina, USA on 6 Dec 1977 reputedly aged 118 years. Mrs Rosario Reina Vasquez who died in California on 2 Sept 1980 was reputedly born in Sonora, Mexico on 3 June 1866, which would make her 114 years 93 days.

² Mrs Ellen Carroll died in North River, Newfoundland, Canada on 8 Dec 1943, reputedly aged 115 years 49 days.

³ Snr Benita Medrana of Avila died on 28 Jan 1979 allegedly aged 114 years 335 days.

⁴ London-born Miss Isabella Shephard was allegedly 115 years old when she died at St Asaph, Clwyd, North Wales, on 20 Nov 1948, but her actual age was believed to have been 109 years 90 days. Charles Alfred Nunez Arnold died in Liverpool on 15 Nov 1941 reputedly aged 112 years 66 days based on a baptismal claim (London, 10 Sept 1829). Mrs Elizabeth Cornish (née Veale) who was buried at Stratton, Cornwall on 10 Mar 1691/2 was reputedly baptized on 16 Oct 1578, 113 years 4 months earlier.

⁵ Mrs Susan Johanna Deporter of Port Elizabeth, South Africa, was reputedly 114 years old when she died on 4 Aug 1954. Mrs Sarah Lawrence, Cape Town, South Africa was reputedly 112 on 3 June 1968.

⁶ Thomas Peters was recorded to have been born on 6 Apr 1745 in Leeuwarden and died aged 111 years 354 days on 26 Mar 1857 in Arnhem.

⁷ There are allegedly 21,700 centenarians in USSR (cf. 7000 in USA). Of these 21,000 are ascribed to the Georgian SSR i.e. one in every 232. In July 1962 it was reported that 128, mostly male, were in the one village of Medini.

⁸ Friedrich Sadowski of Heidelberg reputedly celebrated his 111th birthday on 31 Oct 1936. Franz Joseph Eder d. Spitzburg 3 May 1911, allegedly aged 116.

⁹ Senhora Jesuina da Conceicao of Lisbon was reputedly 113 years old when she died on 10 June 1965.

Note: fl is the abbreviation for *floruit*, Latin for he (or she) was living at the relevant date.

fourth category of recent claims are those made for political ends, such as the 100 citizens of the Russian Soviet Federative Socialist Republic (population about 132,000,000 at mid-1967) claimed in March 1960 to be between 120 and 156. From data on documented centenarians, actuaries have shown that only one 115-year life can be expected in 2100 million lives (*cf.* world population was estimated to be 4575 million at mid-1982).

The height of credulity was reached on 5 May 1933, when a news agency solemnly filed a story from China with a Peking date-line that Li Chung-yun, the 'oldest man on Earth', born in 1680, had just died aged 256 years (*sic*). Recently the most extreme case of longevity claimed in the USSR has been 168 years for Shirali 'Baba' Mislomov of Barzavu, Azerbaijan, who died on 2 Sept 1973 and was reputedly born on 26 Mar 1805. No interview of this man has ever been permitted to any Western journalist or scientist. He was said to have celebrated the 100th birthday of his third wife Hartun, in 1966, and that of one of his grandchildren in August 1973. It was reported in 1954 that in the Abkhassian Republic of Georgia, USSR, where aged citizens are invested with an almost saint-like status, 2.58 per cent of the population was aged over 90—25 times the proportion in the USA.

Official Soviet insistence in 1961 on the unrivalled longevity of the country's citizenry is curious in view of the fact that the 592 persons in their unique 'over 120' category must have spent at least the first 78 years of their prolonged lives under Tsarism. It has recently been suggested that the extreme ages claimed by some men in Georgia, USSR, are the result of attempts to avoid military service when they were younger, by assuming the identities of older men.

Dr Zhores A. Medvedev, the expelled Soviet gerontologist, in Washington DC, on 30 Apr 1974 referring to USSR claims stated 'The whole phenomenon looks like a falsification' adding 'He [Stalin] liked the idea that [other] Georgians lived to be a 100 or more.' 'Local officials tried hard to find more and more cases for Stalin.' He points out (a) the average life-span in the regions claiming the highest incidence of centenarians is lower than the USSR average and (b) the number of centenarians claimed in the Caucasus has declined rapidly from 8000 in 1950 to 4500 in 1970. Dr I. M. Spector, of the Institute of Traumatology, Kazan, USSR quoted the maximum life-span of man in April 1974 as '110–115 years', though Dr Medvedev, in December 1977, put the proven limit in the USSR as low as 108 years.

After 4 years the Andean valley of Vilcabamba in Peru ceased, from February 1978, to be the source of highly publicised and uncritical reports about very aged humans. These, it was said, lived up to 25 years beyond the so far acceptable limit of about 117 years. The discovery by Mazess and Forman was published in March 1978 that inhabitants had pointed to baptismal entries of their fathers, and even their grandfathers, as their own, reduced the age of the valley's oldest man from 140 to 96. The lucrative income from tourism is expected to decline *pari passu*.

The 1900 US Federal Census for Crawfish Springs Militia District of Walker County, Georgia, records an age of 77 for a Mark Thrash. If the Mark Thrash (reputedly born in Georgia in December 1822) who died near Chattanooga, Tennessee on 17 Dec 1943 was he, and the age attributed was accurate, then he would have survived for 121 years.



Harris Shoerats of Bournemouth, Dorset who claims to be the oldest man in Britain at 111 years. The oldest living person born in Britain is Mrs Anna Williams of Tuxedo Old Peoples' Home, Swansea. She was born on 2 June 1873.

Oldest authentic centenarian World

The greatest *authenticated* age to which any human has ever lived is a unique 117th birthday in the case of Shigechiyo Izumi of Asan on Tokunoshima Island, 820 miles 1320 km SW of Tokyo, Japan. He was born where he lives on 29 June 1865 and recorded as a 6-year-old in Japan's first census of 1871. He watches television and says the best way to a long life is 'not to worry' and to leave things to 'God, the Sun, and Buddha'. He was visited by the Editor on 3 Apr 1980.

Oldest authentic centenarian Great Britain

The United Kingdom has an estimated population of some 4000 centenarians of whom only 22 per cent were male. The only UK citizens with birth and death certificates more than 112 years apart have been Miss Alice Stevenson (1861–1973) and Miss Janetta Jane Thomas (1869–1982). The latter was born at Llantrisant, Glamorgan on 2 Dec 1869 and died on 5 Jan 1982 aged 112 years 35 days or 4 days short of Miss Stevenson (see Table, page 16). Britain's oldest proven man has been John Mosley Turner (b. 15 June 1856), who died on 22 Mar 1968 aged 111 years 281 days. In April 1706 a John Bailes was buried at All Saints Church, Northampton, having apparently been baptised on 20 Aug 1592. If the same person, he would have been 113 years 8 months. The highest age claimed by a living UK resident is 111 years 14 days (on 24 June 1982) by Harris Shoerats of Bournemouth, Dorset who claims to have been born at Hovnajok, Russia on 10 June 1871.

Oldest Quadruplets

The world's oldest quads are the Ottman quads of Munich, West Germany, born on 5 May 1912—Adolf; Anne-Marie; Emma and Elisabeth.

Oldest Triplets

The longest-lived triplets on record were Faith, Hope and Charity Caughlin born at Marlboro, Massachusetts, USA on 27 Mar 1868. The first to die was Mrs (Ellen) Hope Daniels aged 93 on 2 Mar 1962.

Oldest twins World/Great Britain

The chances of identical twins both reaching 100 are said to be one in 700 million. The oldest recorded twins were Eli and John Phipps (b. 14 Feb 1803, Affington, Virginia). Eli died at Hennessey, Oklahoma, USA on 23 Feb 1911 aged 108 years 9 days on which day John was still living in Shenandoah, Iowa. On 14 Jan 1982, identical twin sisters, Lucy Brown Coleman and Elizabeth Brown English of Georgia, USA, beat the odds. The oldest twins on record in Great Britain have been the Bean twins Robert, of Birkenhead, Merseyside and Mary (now Mrs Simpson) of Etton, Cambridgeshire who celebrated their 100th birthday on 19 Oct 1973. Robert died before the end of 1973.

Most reigns

The greatest number of reigns during which any English subject could have lived is ten. A person born on the day (11 April) that Henry VI was deposed in 1471 had to live to only the comparatively modest age of 87 years 7 months and 6 days to see the accession of Elizabeth I on 17 Nov 1558. Such a person could

have been Thomas Carn of London, reputedly born in 1471 and died 28 Jan 1578 in his 107th year.

Last 18th-century link

The last Briton with 18th-century paternity was Miss Alice J. Grigg of Belvedere, Kent (d. 28 Apr 1970) whose father William was born on 26 Oct 1799.

Oldest Mummy

Mummification (from the Persian word *mām*, wax) dates from 2600 BC or the 4th dynasty of the Egyptian pharaohs. The oldest surviving mummy is of Waty, a court musician of c. 2400 BC from the tomb of Nefer in Saqqāra, Egypt.

4. REPRODUCTIVITY

MOTHERHOOD

Most children World

The greatest officially recorded number of children produced by a mother is 69 by the first of the two wives of Feodor Vassilyev (b. 1707–fl. 1782), a peasant from Shuya, 150 miles 241 km east of Moscow. In 27 confinements she gave birth to 16 pairs of twins, 7 sets of triplets and 4 sets of quadruplets. The case was reported by the Monastery of Nikolskiy on 27 Feb 1782 to Moscow. At least 67 survived infancy. Empress Ekaterina II (The Great) (1762–96) was reputed to have evinced interest. The children, of whom almost all survived to their majority, were born in the period c. 1725–65.

Currently the world's most prolific mother is reported to be Leontina Albina (*née* Espinosa) (b. 1925) of San Antonio, Chile, who was reported pregnant in November 1980 having already produced 44 children. Her husband Gerardo Secundo Albina (variously Alvina) (b. 1921) states that he was married in Argentina in 1943 and they had 5 sets of triplets (all boys) before coming to Chile. 'Only' 40 (24 boys and 16 girls) survive. Eleven were lost in an earthquake thus indicating the truth about other children born earlier than the 45 born in Chile.

Great Britain

The British record is seemingly held by Elizabeth, wife of John Mott married in 1676 of Monks Kirby, Warwickshire, who produced 42 live-born children. She died in 1720, 44 years later. According to an inscription on a gravestone in Conway Church cemetery, Gwynedd, North Wales, Nicholas Hooke (d. 27 Mar 1637) was the 41st child of his mother Alice Hooke, but further details are lacking. It has not been possible to corroborate or refute this report. The highest recent reported figure is 25 children, including 3 sets of twins, born to Mrs Ada Watson (b. Cambridge, 23 June 1886) of Roehampton, who died on 5 Feb 1974.

Great Britain's champion mothers of today are believed to be Mrs Margaret McNaught (b. 1923), of Balsall Heath, Birmingham (12 boys and 10 girls, all single births) and Mrs Mabel Constable (b. 1920), of Long Itchington, Warwickshire who also has had 22 children including a set of triplets and two sets of twins.

Oldest mother World

Medical literature contains extreme but unauthenticated cases of septuagenarian mothers, such as Mrs Ellen Ellis, aged 72, of Four Crosses, Clwyd, who allegedly produced a still-born 13th child on 15 May 1776 in her 46th year of marriage. Many cases are cover-ups for illegitimate grandchildren. The oldest recorded mother of whom there is certain evidence is Mrs Ruth Alice Kistler (*née* Taylor), formerly Mrs Shepard, of Portland, Oregon, USA. She was born at Wakefield, Massachusetts, on 11 June 1899 and gave birth to a daughter, Suzan, at Glendale, near Los Angeles, California, on 18 Oct 1956, when her age was 57 years 129 days. The incidence of quinquagenarian births varies widely with the highest purported rate being in Albania (with nearly 5500 per million) compared with 2 per million in England & Wales.

Great Britain

The oldest British mother reliably recorded is Mrs Winifred Wilson (*née* Stanley) of Eccles, Greater Manchester. She was born in Wolverhampton on 11 Nov 1881 or 1882 and had her

tenth child, a daughter Shirley, on 14 Nov 1936, when aged 54 or 55 years and 3 days. She died aged 91 or 92 in January 1974. At Southampton, on 10 Feb 1916, Mrs Elizabeth Pearce gave birth to a son when aged 54 years 40 days.

Ireland

The oldest Irish mother recorded was Mrs Mary Higgins of Cork, County Cork (b. 7 Jan 1876) who gave birth to a daughter, Patricia, on 17 Mar 1931 when aged 55 years 69 days.

Descendants

In polygamous countries, the number of a person's descendants can become incalculable. The last Sharifian Emperor of Morocco, Moulay Ismail (1672-1727), known as 'The Blood-thirsty', was reputed to have fathered a total of 548 sons and 340 daughters.

Capt Wilson Kettle (b. 1860) of Grand Bay, Port aux Basques, Newfoundland, Canada, died on 25 Jan 1963, aged 102, leaving 11 children by two wives, 65 grandchildren, 201 great-grandchildren and 305 great-great-grandchildren, a total of 582 living descendants. Mrs Johanna Booyson (see page 16), of Belfast, Transvaal, was estimated to have 600 living descendants in South Africa in January 1968.

Mrs Sarah Crawshaw (d. 25 Dec 1844) left 397 descendants according to her gravestone in Stones Church, Ripponden, Halifax, West Yorkshire.

Multiple great-grandparents

While eight 15 year generations are possible in a 105 year life span for a 5 greats-grandparent, no case of a 4 greats-grandparent has yet been recorded. At least twenty-six cases of great-great-great-grandparents have been reported in the last 29 years. Of these cases the youngest person to learn that their great-granddaughter had become a grandmother was Mrs Ann V. Weirick (1888-1978) of Paxtonville, Pennsylvania, USA, who received news of her great-great-great-grandson Matthew Stork (b. 9 Sept 1976) when aged only 88. She died on 6 Jan 1978. Britain's youngest 3 greats grandmother is Mrs Violet Lewis (b. June 1885) of Southampton.

Most living ascendants

Jesse Jones Werkmeister (b. 27 Oct 1879) of Tilden, Nebraska, USA, had a full set of grandparents and great-grandparents and four great-great-grandparents, making 18 direct ascendants. This was equalled on 21 Oct 1980 on the birth of Kendel Shennar, at Big Beaver, Saskatchewan, Canada.

MULTIPLE BIRTHS

Lightest twins

The lightest recorded birthweight for a pair of surviving twins has been 2 lb 3 oz 992 g in the case of Mary 16 oz 453 g and Margaret 19 oz 538 g born to Mrs Florence Stimson, Queens Road, Old Fletton, Peterborough, England, delivered by Dr Macaulay on 16 Aug 1931. Margaret is now Mrs M. J. Hurst.

'Siamese' twins

Conjoined twins derived the name 'Siamese' from the celebrated Chang and Eng Bunker (known in Thailand as Chan and In) born at Maklong, on 11 May 1811. They were joined by a cartilaginous band at the chest and married in April 1843 the Misses Sarah and Adelaide Yates of Wilkes County, North Carolina, USA and fathered ten and twelve children respectively. They died within three hours of each other on 17 Jan 1874, aged 62. The only known British example to reach maturity were Daisy and Violet Hilton born in Brighton Sussex, on 5 Feb 1908, who were joined at the hip. They died in Charlotte, North Carolina, USA, on 5 Jan 1969, aged 60. The earliest successful separation of Siamese twins was performed on xiphopagus twin girls at Mt Sinai Hospital, Cleveland, Ohio by Dr Jac S. Geller on 14 Dec 1952.

The rarest form of conjoined twins is Dicephalus tetrabrachius dipus (two heads, four arms and two legs) of which only three examples are known today. They are the pair Masha and Dasha born in the USSR on 4 Jan 1950, an unnamed pair separated in a 10-hour operation in Washington, DC, USA on 23 June 1977, and Fonda Michelle and Shannon Elaine Beaver of Forest City, North Carolina, USA born on 9 Feb 1980. The only known British example were the 'Scottish brothers', who were born near Glasgow in 1490. They were brought to the Court of King James IV of Scotland in 1491, and lived under the king's

MULTIPLE BIRTHS

	World	United Kingdom
HIGHEST NUMBER REPORTED AT SINGLE BIRTH	10 (decaplets) (2 male, 8 female) Bacacay, Brazil, 22 Apr 1946 (also report from Spain, 1924 and China, 12 May 1936)	
HIGHEST NUMBER MEDICALLY RECORDED	9 (nonuplets) (5 male, 4 female) to Mrs Geraldine Broderick at Royal Hospital, Sydney, Australia on 13 June 1971. 2 males stillborn. Richard (12 oz 340 g) survived 6 days 9 (all also died) to patient at University of Pennsylvania, Philadelphia 29 May 1972 9 (all died) reported from Bagerhat, Bangladesh, c. 11 May 1977 to 30-year-old mother	6 (sextuplets) (2 male, 4 female) to Mrs Sheila Ann Thorns (née Manning) at New Birmingham Maternity Hospital on 2 Oct 1968. Three survive. 6 (1 male, 5 female) to Mrs Rosemary Letts (née Egerton) at University College Hospital, Greater London, on 15 Dec 1969. One boy and 4 girls survive
HIGHEST NUMBER SURVIVING ¹	6 out of 6 (3 males, 3 females) to Mrs Susan Jane Rosenkowitz (née Scoones) (b. Colombo, Sri Lanka, 28 Oct 1947) at Mowbray, Cape Town, South Africa on 11 Jan 1974. In order of birth they were: David, Nicolette, Jason, Emma, Grant and Elizabeth. They totalled 24 lb 1 oz 10,915 kg 6 out of 6 (4 males, 2 females) to Mrs Rosanna Giannini (b. 1952) at Careggi Hospital, Florence, Italy on 11 Jan. 1980. They are Francesco, Fabrizio, Giorgio, Roberto, Letizia and Linda	5 out of 6 (as above) and also 5 out of 5 (5 females) to Mrs Irene Mary Hanson (née Brown) at Queen Charlotte's Hospital London on 13 Nov 1969 and 5 out of 5 (1 male, 4 females) to Mrs James Bostock of Armadale, Lothian, Scotland (no use of fertility drugs) on 14 Apr 1972
QUINTUPLETS	<i>World</i> 25 lb 11,35 kg Mrs Lui Saulien, Chekiang, China, 7 June 1953 25 lb 11,35 kg Mrs Kamalammal, Pondicherry, India, 30 Dec 1956	<i>Most Sets</i> No recorded case of more than a single set
QUADRUPLETS	<i>World</i> 10,35 kg 22 lb 13 oz Mrs Ayako Takeda, Tsuchihashi Maternity Hospital, Kagoshima, Japan, 4 Oct 1978 (4 girls)	4 Mde Feodor Vassilyev, Shuya, Russia (d. ante 1770)
TRIPLETS	<i>World</i> 26 lb 6 oz 11,96 kg (unconfirmed) Iranian case (2 male, 1 female) 18 Mar 1968 <i>UK</i> 24 lb 0 oz 10,886 kg Mrs Mary McDermott, of Bearpark, Co Durham, 18 Nov 1914	15 Maddalena Granata (1839-?. 1886)
TWINS	<i>World</i> 27 lb 12 oz 12,590 kg (surviving) Mrs J. P. Haskin, Fort Smith, Arkansas, USA, 20 Feb 1924 <i>UK</i> The 35 lb 8 oz 16,1 kg reported in <i>The Lancet</i> from Derbyshire, England, on 6 Dec 1884 for the Warren Case (2 males liveborn) is believed to have been a misprint for 25 lb 8 oz 11,6 kg	16 Mde Vassilyev (see above). Note also Mrs Barbara Zulu of Barbeton, South Africa bore 3 sets of girls and 3 mixed sets in 7 years (1967-73) 15 Mrs Mary Jonas of Chester (d. 4 Dec 1899)—all sets were boy and girl

¹ The South African press were unable to verify the birth of 5 babies to Mrs Charmaine Craig (née Peterson) in Cape Town on 16 Oct 1980 and a sixth on 8 Nov. The reported names were Frank, Salome, John, Andrew, William and belatedly Deborah.

patronage for the rest of his reign. They died in 1518 aged 28 years, one brother succumbing five days before the other, who 'moaned piteously as he crept about the castle gardens, carrying with him the dead body of the brother from whom only death could separate him and to whom death would again join him.'

Most twins Geographically

In Chungchon, South Korea it was reported in September 1981 that there was unaccountably 38 pairs in only 275 families—the highest ever recorded ratio.

Fastest triplet birth

The fastest recorded natural birth of triplets has been 2 minutes in the case of Mrs James E. Duck of Memphis, Tennessee (Bradley, Christopher and Carmon) on 21 Mar 1977.

Quindecaplets

It was announced by Dr Gennaro Montanino of Rome that he had removed the foetuses of 10 girls and 5 boys from the womb of a 35-year-old housewife on 22 July 1971. A fertility drug was responsible for this unique and unsurpassed instance of quindecaplets.

Longest pregnancy

Claims up to 413 days have been widely reported but accurate data are bedevilled by the increasing use of oral contraceptive pills which is a cause of amenorrhoea. Some women on becoming pregnant erroneously add some preceding periodless months to their pregnancy. In the pre-pill era English law has accepted pregnancies with extremes of 174 days (*Clark v. Clark*, 1939) and 349 days (*Hadlum v. Hadlum*, 1949).

Most proximate births and shortest pregnancies

Mrs Gloria Kuehn of Lemay, Missouri, USA gave birth to a daughter, Amy Elizabeth, on 9 June 1978 and a son, Gregory Charles, on 19 Jan 1979, 224 days later.

BABIES

Heaviest World

The heaviest viable baby on record of normal parentage was a boy of 22 lb 8 oz 10,2 kg born to Sig Carmelina Fedele of Aversa, Italy in September 1955. Mrs Anna Bates née Swan (1846–88), the 7 ft 5½ in 227 cm Canadian giantess (see also pp. 11–12), gave birth to a boy weighing 23 lb 12 oz 10,77 kg (length 30 in 76 cm) at her home in Seville, Ohio, USA on 19 Jan 1879, but the baby died less than 24 hours later. Her first child, an 18 lb 8,16 kg girl (length 24 in 61 cm) was still-born when she was delivered in 1872. On 9 Jan 1891 Mrs Florentin Ortega of Buenos Aires, Argentina produced a still-born boy weighing 25 lb 11,3 kg. In May 1939 a deformed baby weighing 29 lb 4 oz 13,26 kg was born in a hospital at Effingham, Illinois, USA, but died two hours later from respiratory problems.

Heaviest United Kingdom

The greatest recorded live birth weight in the United Kingdom is 21 lb 9,53 kg for a child born on Christmas Day, 1852. It was reported in a letter to the *British Medical Journal* (1 Feb 1879) from a doctor in Torpoint, Cornwall. The only other reported birth weight in excess of 20 lb 9,07 kg is 20 lb 2 oz 9,13 kg for a boy born to a 33-year-old schoolmistress in Crewe, Cheshire, on 12 Nov 1884 with a 14½ in 36,8 cm chest. A baby of 33 lb 14,97 kg was reportedly born to a Mrs Lambert of Wandsworth Road, London c. 1930 but its measurements indicate a weight of about 17 lb 7,7 kg.

Most bouncing baby

The most bouncing baby on record was probably James Weir (1819–1821) who, according to his headstone in Cambushnetan, Old Parish Cemetery, Wishaw, Strathclyde, Scotland was 8 st or 112 lb 50,8 kg at 13 months, 3 ft 4 in 1,01 m in height and 39 in 99 cm in girth.

Therese Parentean, who died in Rouyn, Quebec, Canada on 11 May 1936 aged 9 years, weighed 24 st 4 lb 154 kg. (cf. 27 st 171 kg for Robert Earl Hughes at the age of ten [see table p. 13 and Chest measurements p. 20]).

Lightest

The lowest birth weight recorded for a surviving infant, of

which there is definite evidence, is 10 oz 283 g in the case of Marion Chapman who was born six weeks premature on 5 June 1938 in South Shields, Tyne and Wear. She was born unattended (length 12¼ in 31 cm) and was nursed by Dr D. A. Shearer, who fed her hourly for the first 30 hours with brandy, glucose and water through a fountain-pen filler. At three weeks she weighed 1 lb 13 oz 821 g and by her first birthday her weight had increased to 13 lb 14 oz 6,29 kg. Her weight on her 21st birthday was 7 st 8 lb 48,08 kg. The smallest viable baby reported from the United States has been Jacqueline Benson born at Palatine, Illinois, on 20 Feb 1936, weighing 12 oz 340 g.

A weight of 8 oz 227 g was reported on 20 Mar 1938 for a baby born prematurely to Mrs John Womack, after she had been knocked down by a lorry in East St Louis, Illinois, USA. The baby was taken alive to St Mary's Hospital, but further information is lacking. On 23 Feb 1952 it was reported that a 6 oz 170 g baby only 6½ in 17 cm long lived for 12 hours in a hospital in Indianapolis, Indiana, USA. A twin was still-born.

Coincident birthdates

The only verified example of a family producing five single children with coincident birthdays is that of Catherine (1952); Carol (1953); Charles (1956); Claudia (1961) and Cecilia (1966), born to Ralph and Carolyn Cummins of Clintwood, Virginia, USA, all on 20 February. The random odds against five single siblings sharing a birthdate are one in 17,797,577,730—almost 4 times the world's population.

The three children of the Henriksen family of Andenes, Norway, Heidi (b. 1960); Olav (b. 1964) and Lief-Martin (b. 1968) all celebrate their birthday infrequently, because these all fall on Leap Day – February 29.

Most southerly birth

Emilio Marcos Palma born 7 Jan 1978 at the Sargento Cabral Base, Antarctica is the only infant who can claim to be the first born on any continent.

Test tube baby Earliest

Louise Brown (5 lb 12 oz 2,6 kg) was delivered by Caesarian section from Lesley Brown, 31, in Oldham General Hospital, Lancashire, at 11.47 p.m. on 25 July 1978. She was externally conceived on 10 Nov 1977.

5. PHYSIOLOGY AND ANATOMY

Hydrogen (63 per cent) and oxygen (25.5 per cent) constitute the commonest of the 24 elements in the human body. In 1972 four more trace elements were added—fluorine, silicon, tin and vanadium. The 'essentiality' of nickel has not yet been finally pronounced upon.

BONES

Longest

Excluding a variable number of sesamoids, there are 206 bones in the human body. The thigh bone or femur is the longest. It constitutes usually 27½ per cent of a person's stature, and may be expected to be 19¾ in 50 cm long in a 6 ft 183 cm-tall man. The longest recorded bone was the femur of the German giant Constantine, who died in Mons, Belgium, on 30 Mar 1902, aged 30 (see p. 11). It measured 76 cm 29,9 in. The femur of Robert Wadlow, the tallest man ever recorded, measured an estimated 29½ in 75 cm.

Smallest

The stapes or stirrup bone, one of the three auditory ossicles in the middle ear, is the smallest human bone, measuring from 2,6 to 3,4 mm 0.10 to 0.17 in in length and weighing from 2,0 to 4,3 mg 0.03 to 0.065 g.

MUSCLES

Largest

Muscles normally account for 40 per cent of the body weight and the bulkiest of the 639 muscles in the human body is the *gluteus maximus* or buttock muscle, which extends the thigh.

Smallest

The smallest muscle is the *stapedius*, which controls the stapes

(see above), an auditory ossicle in the middle ear, and which is less than 1/20th of an inch 0.127 cm long.

Swedish philosopher and theologian, at a sale held at Sotheby's, London.

Smallest waists

Queen Catherine de Medici (1519–89) decreed a waist measurement of 13 in 33 cm for ladies of the French Court. This was at a time when females were more diminutive. The smallest recorded waist among women of normal stature in the 20th century is a reputed 13 in 33 cm in the case of the French actress Mlle Polaire (1881–1939) and Mrs Ethel Granger (1905–82) of Peterborough who reduced from a natural 22 in 56 cm over the period 1929–39.

Largest chest measurements

The largest chest measurements are among endomorphs (those with a tendency towards globularity). In the extreme cases of Hughes (see table p. 13) this was reportedly 124 in 315 cm, but in the light of his known height and weight a figure of 104 in 264 cm would be more supportable. George Macaree (formerly Britain's heaviest man) has a chest measurement of 73 in 185 cm at a bodyweight of 29 st 7 lb 187 kg (height 5 ft 10 in 177.8 cm). Among muscular subjects (mesomorphs) of normal height expanded chest measurements above 56 in 142 cm are extremely rare. Vasil Alexeyev (b. 1942), the 6 ft 1 1/4 in 186 cm Russian super-heavyweight weight-lifting champion, had a 60 1/2 in 153.6 cm chest at his top weight of 350 lb 158.7 kg. Arnold Schwarzenegger (b. 1948) of Graz, Austria, the 6 ft 1 in 185 cm former Mr Universe and 'the most perfectly developed man in the history of the world', had a chest measurement of 57 in 145 cm at his best bodyweight of 235 lb 107 kg. The power lifter Gary Arahamian, the first to achieve a cold (not pumped) biceps measurement over 25 in 63.5 cm with 25 3/8 in 64.4 cm has a normal chest measurement of 61 in 155 cm.

Longest necks

The maximum measured extension of the neck by the successive fitting of copper coils, as practised by the Padaung or Karen people of Burma, is 15 3/4 in 40 cm.

BRAIN AND BRAIN POWER

Largest

The brain of an average adult male (i.e. 30–59 years) weighs 1424 g 3 lb 2.2 oz, falling to 1030 g 2 lb 4.31 oz. The heaviest non-diseased brain on record was that of Ivan Sergeyvich Turgenyev (1818–83), the Russian author. His brain weighed 2012 g 4 lb 6.9 oz, while that of Baron Georges Cuvier (1769–1832), the famous French zoologist, was 1830 g 4 lb 0.4 oz. The brain of Oliver Cromwell (1599–1658) reputedly weighed 2222 g 4 lb 14.8 oz, but the size of his head in portraits and the preserved skull do not support this extreme figure. The brain of Lord Byron, who died in Greece in 1824 aged 36, reportedly weighed 6 Neapolitan pounds (1924 g or 4 lb 3.86 oz), but this also included a certain amount of blood. The heaviest brain ever recorded was that of a 50-year-old white male weighing 4 lb 8.29 oz 2049 g reported by Dr Thomas F. Hegert, Chief Medical Examiner for District 9, State of Florida on 23 Oct 1975. In January 1891 the Edinburgh Medical Journal reported the case of a 75-year-old man in the Royal Edinburgh Asylum whose brain weighed 1829 g 4 lb 0.5 oz.

Human brains are getting heavier. Examination of post-mortem records shows that the average male brain weight has increased from 1372 g 3 lb 0.4 oz in 1860 to 1424 g 3 lb 2.2 oz today. Women's brains have also put on weight, from 1242 g 2 lb 11.8 oz to 1265 g 2 lb 12.6 oz and in recent years have been growing almost as fast as men's!

Smallest

The non-atrophied brain of the writer Anatole France (1844–1924) weighed only 1017 g 2 lb 3.8 oz without the membrane, and that of Franz Joseph Gall (1758–1828), a founder of phrenology, 1198 g 2 lb 10.3 oz. Brains in extreme cases of microcephaly may weigh as little as 300 g 10.6 oz (cf. 20 oz 567 g for the adult male gorilla, and 16–20 oz 454–567 g for other anthropoid apes).

Most expensive skull

On 6 Mar 1977 the Royal Swedish Academy of Sciences paid £5500 for the skull of Emanuel Swedenborg (1688–1772), the

Highest IQ

People of the very highest measurable intelligence are said to be not especially intuitive or perceptive or free from prejudice. They usually occupy rather undistinguished jobs. Their success in the academic world can be handicapped by often peevish inability to tolerate repetition of what is (to them) obvious.

Comparability between one scale and another and within one scale close to the ceiling of 200 IQ points is impracticable. The most elite ultra-high IQ Society comprises the 15 members of the Mega Society for which an IQ of 193 (measured on the widely accepted Binet scale), exhibited in 1 person in about 1,000,000, is a requisite.

The two members who have scored 197 are Christopher Phillip Harding (born Keynsham, England, 1944) of Rockhampton, Queensland, Australia and Wolfgang Jensen (born Eiserfeld, West Germany, 1962) of Cape Town, South Africa.

The highest IQ published for a national population is 106.6 for the Japanese (cf. 100 for the UK).

Human computer

The fastest extraction of a 13th root from a 100 digit number is in 1 min 28.8 sec by Willem Klein (b. 1912, Netherlands) on 7 Apr 1981 at the National Laboratory for High Energy Physics (KEK), Tsukuba, Japan. Mrs Shakuntala Devi of India demonstrated the multiplication of two 13-digit numbers 7,686,369,774,870 × 2,465,099,745,779 picked at random by the Computer Department of Imperial College, London on 18 June 1980, in 28 sec. Her correct answer was 18,947,668,177,995,426,462,773,730.

Human memory

Mehmed Ali Halici of Ankara, Turkey on 14 Oct 1967 recited 6666 verses of the Koran from memory in 6 hours. The recitation was followed by six Koran scholars. Rare instances of eidetic memory—the ability to re-project and hence 'visually' recall material—are known to science.

The greatest number of places of π

All India Radio broadcast in its *Weekly Roundup* on 5 July 1981 part of a recording made earlier that day of Rajan Srinivasen Mahadevan, 23, in the process of reciting 'pi' from memory (in English) to 31,811 places in 3 hr 49 min (incl. 26 min of breaks) at the Lion Seva Mandir, Mangalore. His rate was 156.7 digits per minute. The British record is 20,013 by Creighton Carvello on 27 June 1980 in 9 hr 10 min at the Saltscar Comprehensive School, Redcar, Cleveland, England. Note: It is only the approximation of π at 2 2/7 which recurs after its sixth decimal place and can, of course, be recited *ad nauseam*. The true value is a string of random numbers fiendishly difficult to memorise. The average ability for memorizing random numbers is 7.

HANDS AND HAIR

Touch sensitivity

The extreme sensitivity of the fingers is such that a vibration with a movement of 0.02 of a micron can be detected.

Most fingers and toes

At an inquest held on a baby at Shoreditch, East London on 16 Sept 1921 it was reported that the boy had 14 fingers and 15 toes.

Least toes

The 'lobster claw syndrome' exhibited by the two-toed Kalanga people of the Zimbabwe–Botswana border area is hereditary *via* a single mutated gene.

Longest finger nails

The longest finger nails ever reported are those of Shridhar Chhillal, (b. 1937) of Poona, India. The aggregate measurement, reached on 21 Mar 1982, was 116 1/2 in 296 cm for the 5 nails on his left hand (thumb 29 1/2 in 74.9 cm). He last cut his nails in 1952.

Longest hair

Swami Pandarasannadhi, the head of the Tirudaduturai

monastery, Tanjore district, Madras, India was reported in 1949 to have hair 26 ft 7.93 m in length. From photographs it appears that he was afflicted with the disease plica caudiformis, in which the hair becomes matted and crusted as a result of neglect. The length of hair of Miss Skuldfrið Sjorgren (b. Stockholm) was reported from Toronto, Canada in 1927 to have reached twice her height at 10 ft 6 in 3.20 m.

Longest beard

The longest beard preserved was that of Hans N. Langseth (b. 1846 near Eidsroll, Norway) which measured 17½ ft 5.33 m at the time of his burial at Kensett, Iowa in 1927 after 15 years residence in the United States. The beard was presented to the Smithsonian Institution, Washington, DC in 1967. Richard Latter (b. Pembury, Kent, 1831) of Tunbridge Wells, Kent, who died in 1914 aged 83, reputedly had a beard 16 ft 4.87 m long but contemporary independent corroboration is lacking and photographic evidence indicates this figure was exaggerated. The beard of the bearded lady Janice Deveree (b. Bracken Co., Kentucky, USA, 1842) was measured at 14 in 36 cm in 1884.

Longest moustache

The longest moustache on record was that of Masuriya Din (b. 1908), a Brahmin of the Partabgarh district in Uttar Pradesh, India. It grew to an extended span of 8 ft 6 in 2.59 m between 1949 and 1962. Karna Ram Bheel (b. 1928) was granted permission by a New Delhi prison governor in February 1979 to keep his 7 ft 10 in 238 cm moustache grown since 1949 during his life sentence. The longest moustache in Great Britain is that of Mr John Roy (b. 14 Jan 1910), of Weeley, near Clacton, Essex. It attained a peak span of 68½ in 174 cm between 1939 and when measured on the BBC-TV 'Nationwide' programme on 2 Apr 1976.

DENTITION

Earliest

The first deciduous or milk teeth normally appear in infants at 5–8 months, these being the mandibular and maxillary first incisors. There are many records of children born with teeth, the most distinguished example being Prince Louis Dieudonné, later Louis XIV of France, who was born with two teeth on 5 Sept 1638. Molars usually appear at 24 months, but in Pindborg's case published in Denmark in 1970 a 6-week premature baby was documented with 8 natal teeth of which 4 were in the molar region.

Most

Cases of the growth in late life of a third set of teeth have been recorded several times. A reference to an extreme case in France of a fourth dentition, known as Lison's case, was published in 1896. A triple row of teeth was noted in 1680 by Albertus Hellwius.

Most dedicated dentist

Brother Giovanni Battista Orsenigo of the Ospedale Fatebenefratelli, Rome, Italy, a religious dentist, conserved all the teeth he extracted in three enormous cases during the time he exercised his profession from 1868 to 1904. In 1903 the number was counted and found to be 2,000,744 teeth.

Most valuable tooth

In 1816 a tooth belonging to Sir Isaac Newton (1643–1727) was sold in London for £730. It was purchased by a nobleman who had it set in a ring which he wore constantly.

OPTICS

Smallest visible object

The resolving power of the human eye is 0.0003 of a radian or an arc of one minute (1/60th of a degree), which corresponds to 100 microns at 10 in. A micron is a thousandth of a millimetre, hence 100 microns is 0.003937, or less than four thousandths, of an inch. The human eye can, however, detect a bright light source shining through an aperture only 3 to 4 microns across. In October 1972 the University of Stuttgart, W. Germany reported that their student Frl Veronica Seider (b. 1953) possessed a visual acuity 20 times better than average. She could identify people at a distance of more than a mile 1.6 km. The Russians are reputedly working on a new type of lens implant which will give the wearer super-human sight.

Colour sensitivity

The unaided human eye, under the best possible viewing conditions, comparing large areas of colour, in good illumination, using both eyes, can distinguish 10,000,000 different colour surfaces. The most accurate photo-electric spectrophotometers possess a precision probably only 40 per cent as good as this. About 7.5 per cent of men and 0.1 per cent of women are colour blind. The most extreme form, monochromatic vision, is very rare. The highest recorded rate of red-green colour blindness is in Czechoslovakia and the lowest rate among Fijians and Brazilian Indians.

VOICE

Highest and lowest

The highest and lowest recorded notes attained by the human voice before this century were a staccato E in *alt altissimo* (e^{iv}) by the American Ellen Beach Yaw (1869–1947) in Carnegie Hall, New York City on 19 Jan 1896, and an A₁ (55 cycles per sec) by Kasper Foster (1617–73). Madeleine Marie Robin (1918–60) the French operatic coloratura could produce and sustain the B above high C in the Lucia mad scene in *Lucia di Lammermoor*. Since 1950 singers have achieved high and low notes far beyond the hitherto accepted extremes. However, notes at the bass and treble extremities of the register tend to lack harmonics and are of little musical value. Frl Marita Gunther, trained by Alfred Wolfsohn, has covered the range of the piano from the lowest note, A₁₁, to c⁷. Of this range of 7¼ octaves, six octaves are considered to be of musical value. Mr Roy Hart, also trained by Wolfsohn, has reached notes below the range of the piano. Barry Girard of Canton, Ohio in May 1975 reached the e (4340 Hz) above the piano's top note. The highest note put into song is G^v first occurring in *Popoli di Tessaglia* by Mozart. The lowest vocal note in the classical repertoire is in Mozart's *Il Seraglio* by Osmin who descends to low D (73.4 cps). J. D. Sumner of Nashville, Tennessee in his album *Blessed Assurance* reaches the C below low C (32.7 cps). Stefan Zucker sang A in *alt altissimo* for 3.8 sec in the tenor role of Salvini in the world première of Bellini's *Adelson e Salvini* in New York City, USA on 12 Sept 1972.

Greatest range

The normal intelligible outdoor range of the male human voice in still air is 200 yd 180 m. The *silbo*, the whistled language of the Spanish-speaking Canary Island of La Gomera, is intelligible across the valleys, under ideal conditions, at five miles 8 km. There is a recorded case, under freak acoustic conditions, of the human voice being detectable at a distance of 10½ miles 17 km across still water at night. It was said that Mills Darden (see table page 13) could be heard 6 miles 9 km away when he shouted at the top of his voice.

Because of their more optimal frequency, female screams register higher readings on decibel meters than male bellows. The highest scientifically measured emission has been one of 120 dBA on a Bruel & Kjaer Precision Sound Level Meter by Susan Birmingham at Hong Kong Island School on 6 Mar 1982. Peter Van de Vooren twice achieved 112 decibels while whistling, on Radio 2SM Sydney, Australia on 9 Feb 1980.

Lowest detectable sound

The intensity of noise or sound is measured in terms of pressure. The pressure of the quietest sound that can be detected by a person of normal hearing at the most sensitive frequency of c. 2750 Hz is 2×10^{-5} pascal. One tenth of the logarithm to this standard provides a unit termed a decibel (dBA). Prolonged noise above 150 decibels will cause immediate permanent deafness while 200 decibels could be fatal. A noise of 30 decibels is negligible.

Highest detectable pitch

The upper limit of hearing by the human ear has long been regarded as 20,000 Hz (cycles per sec), although children with asthma can often detect a sound of 30,000 cycles per sec. It was announced in February 1964 that experiments in the USSR had conclusively proved that oscillations as high as 200,000 cycles per sec can be heard if the oscillator is pressed against the skull.

Fastest talker

Few people are able to speak *articulately* at a sustained speed above 300 words per min. The fastest broadcaster has been regarded as Gerry Wilmot (b. Victoria BC, Canada 6 Oct 1914)

the ice hockey commentator in the post-World War II period. Raymond Glendenning (1907-74), the BBC horseracing commentator, once spoke 176 words in 30 sec while commenting on a greyhound race. In public life the highest speed recorded is a 327 words per min burst in a speech made in December 1961 by John Fitzgerald Kennedy (1917-63), then President of the United States. Tapes of attempts to recite Hamlet's 262-word Soliloquy in under 24 sec (655 w.p.m.) have proved unintelligible. Patricia Keeling-Andrich delivered 403 words from W. S. Gilbert's 'The Nightmare' in a test in 60 sec at Chabot College, Hayward, California on 16 Mar 1978.

BLOOD

Blood groups

The preponderance of one blood group varies greatly from one locality to another. On a world basis Group O is the most common (46 per cent), but in some areas, for example Norway, Group A predominates.

The full description of the commonest sub-group in Britain is O MsNs, P+, Rr, Lu(a-), K-, Le(a-b+), Fy(a+b+), Jk(a+b+), which occurs in one in every 270 people.

The rarest blood group on the ABO system, one of 14 systems, is AB, which occurs in less than 3 per cent of persons in the British Isles. The rarest type in the world is a type of Bombay blood (sub-type A-h) found so far only in a Czechoslovak nurse in 1961 and in a brother (Rh positive) and sister (Rh negative) named Jalbert in Massachusetts, USA reported in February 1968. The American male has started a blood bank for himself.

Richest natural resources

Joe Thomas of Detroit, Michigan, USA was reported in August 1970 to have the highest known count of Anti-Lewis B, the rare blood antibody. A US biological supply firm pays him \$1500 per quart 1,13 l. The Internal Revenue regard this income as a taxable liquid asset.

Champion blood donor

Since 1966 Allen Doster, a self-employed beautician, has (to 21 Dec 1981) donated 1414 US pints at Roswell Park Memorial Institute, New York, USA as a plasmapheresis donor. The present-day normal limit on donations is 5 pints per annum. A 50-year-old haemophiliac Warren C. Jyrich required 2400 donor units 1080 l of blood when undergoing open heart surgery at the Michael Reese Hospital, Chicago, USA in December 1970.

Largest vein

The largest vein in the human body is the *inferior vena cava*, which returns most of the blood from the body below the level of the heart.

Most alcoholic subject

It is recorded that a hard drinker named Vanhorn (1750-1811), born in London, averaged more than four bottles of ruby port per day for the 23 years from 1788 to his death aged 61 in 1811. The total of his 'empties' was put at 35,688.

The youngest recorded death from alcoholic poisoning was that of a 4-year-old boy, Joseph Sweet, in Wolverhampton, England in 1827 reported in the Stafford Assizes case *R. v. Martin*.

The United Kingdom's legal limit for motorists is 80 mg of alcohol per 100 ml of blood. The hitherto recorded highest figure in medical literature of 656 mg per 100 ml was submerged when the late Samuel Riley (b. 1922) of Sefton Park, Merseyside, was found by a disbelieving pathologist to have a level of 1220 mg on 28 Mar 1979. He had expired in his flat and had been an inspector at the plant of a well-known motor manufacturer.

BODY TEMPERATURE

Highest body temperature

In Kalow's case (*Lancet*, 31 Oct 1970) a woman following halothane anaesthesia ran a temperature of 112°F 44.4°C. She recovered after a procainamide infusion. Marathon runners in hot weather attain 105.8°F 41°C.

A temperature of 115°F 46.1°C was recorded in the case of Christopher Legge in the Hospital for Tropical Diseases,

London, on 9 Feb 1934. A subsequent examination of the thermometer disclosed a flaw in the bulb, but it is regarded as certain that the patient sustained a temperature of more than 110°F 43.3°C.

Lowest body temperature

There are two recorded cases of patients surviving body temperatures as low as 60.8°F 16.0°C. Dorothy Mae Stevens, (1929-74) was found in an alley in Chicago, Illinois on 1 Feb 1951 and Vickie Mary Davis aged 2 years 1 month in an unheated house in Marshalltown, Iowa on 21 Jan 1956, both with this temperature. People may die of hypothermia with body temperatures of 95.0°F 35.0°C.

ILLNESS AND DISEASE

Commonest disease

The commonest non-contagious disease in the world is periodontal disease, such as gingivitis, which afflicts some 80 per cent of the US population. In Great Britain 13 per cent of people have lost all their teeth before they are 21 years old. During their lifetime few completely escape its effects. Infestation with pinworm (*Enterobius vermicularis*) approaches 100 per cent in some areas of the world.

The commonest contagious disease in the world is coryza (acute nasopharyngitis) or the common cold. Only 1,725,000 working days were reportedly lost as a result of this illness in Great Britain between mid-1979 and mid-1980, since absences of less than three days are not reported. The greatest reported loss of working time in Britain is from bronchitis, which accounted for 25,868,000, or 7.2 per cent, of the total of 358,638,000 working days lost in the same period.

The most resistant recorded case to being infected at the Medical Research Council Common Cold Unit, Salisbury, Wiltshire is J. Brophy, who has had one mild reaction in 24 visits.

Rarest disease

Medical literature periodically records hitherto undescribed diseases. A disease as yet undescribed but predicted by a Norwegian doctor is podocytoma of the kidney—a tumour of the epithelial cells lining the glomerulus of the kidney. The last case of endemic Smallpox was recorded in Ali Maow Maalin in Merka, Somalia on 26 Oct 1977.

Kuru, or laughing sickness, afflicts only the Fore tribe of eastern New Guinea and is 100 per cent fatal. This was formally attributed to the cannibalistic practice of eating human brains. The rarest fatal diseases in England and Wales have been those from which the last deaths (all males) were all recorded more than 40 years ago—yellow fever (1930), cholera nostras (1928) and bubonic plague (1926).

Most and least infectious disease

The most infectious of all diseases is the pneumonic form of plague, which also has a mortality rate of about 99.99 per cent. Leprosy transmitted by *Mycobacterium leprae* is the least infectious and most bacilliferous of communicable diseases.

Highest mortality

Rabies in humans has been regarded as uniformly fatal when associated with the hydrophobia symptom. A 25-year-old woman Candida de Sousa Barbosa of Rio de Janeiro, Brazil, was believed to be the first ever survivor of the disease in November 1968, though some sources give priority to Matthew Winkler, 6, who, on 10 Oct 1970, was bitten by a rabid bat.

Leading cause of death

The leading cause of death in industrialised countries is arteriosclerosis (thickening of the arterial wall) which underlies much coronary and cerebrovascular disease.

Most notorious carrier

The most publicized of all typhoid carriers has been Mary Mallon, known as Typhoid Mary, of New York City, NY, USA. She was the source of nine outbreaks, notably that of 1903. She was placed under permanent detention from 1915 until her death in 1938. A still anonymous dairy farmer from Camden, N.Y. was the source of 409 cases (40 fatal) in August 1909.

Parkinson's disease

The most protracted case of Parkinson's disease (named after Dr James Parkinson's essay of 1817) for which the earliest treatments were not published until 1946, is 56 years in the case of Frederick G. Humphries of Croydon, Greater London whose symptoms became detectable in 1923.

MEDICAL EXTREMES

Heart stoppage

The longest recorded heart stoppage is a minimum of 3 hr 32 min in the case of Miss Jean Jawbone, 20, who was revived by a team of 26, using peritoneal dialysis, in Winnipeg Medical Centre, Manitoba, Canada on 19 Jan 1977. In February 1974 Vegard Slettmoe, 5, fell through the ice on the river Nitsely, Norway. He was found 40 min later 2.5 m 8 ft down but was revived in Akerhus Central Hospital without brain-damage.

The longest recorded interval in a *post mortem* birth was one of at least 80 min in Magnolia, Mississippi, USA. Dr. Robert E. Drake found Fanella Anderson, aged 25, dead in her home at 11.40 p.m. on 15 Oct 1966 and he delivered her of a son weighing 6 lb 4 oz 2.83 kg by Caesarean operation in the Beacham Memorial Hospital on 16 Oct 1966.

Pulse rates

A normal adult pulse rate is 70–72 beats per min at rest for males and 78–82 for females. Rates increase to 200 or more during violent exercise and drop to as low as 12 in the extreme case of Dorothy Mae Stevens (see Lowest body temperature, p. 22), and Jean Hilliard (b. 1962) of Fosston, Minnesota, USA on 20 Dec 1980.

Longest coma

The longest recorded coma was that undergone by Elaine Esposito (b. 3 Dec 1934) of Tarpon Springs, Florida, USA. She never stirred since an appendectomy on 6 Aug 1941, when she was 6, in Chicago, Illinois, USA, and she died on 25 Nov 1978 aged 43 years 357 days, having been in a coma for 37 years 111 days. Paul Balay (b. 1936) of Lons le Saunier, Dijon, France has been in a coma since 11 Dec 1955 following a car accident.

Longest dream

Dreaming sleep is characterised by rapid eye movements known as REM. The longest recorded period of REM is one of 2 hr 23 min on 15 Feb 1967 at the department of Psychology, University of Illinois, Chicago on Bill Carskadon, who had had his previous sleep interrupted.

Largest stone

The largest stone or vesical calculus reported in medical literature was one of 13 lb 14 oz 6294 g removed from an 80-year-old woman by Dr Humphrey Arthure at Charing Cross Hospital, London, on 29 Dec 1952.

Longest in iron lung

The longest recorded survival by an 'iron lung' patient is that of Mrs Laurel Nisbet (b. 17 Nov 1912) of La Crescenta, California, USA. She has been in an iron lung continuously since 25 June 1948. The longest survival in an 'iron lung' in Britain has been 30 years by Denis Atkin in Lodge Moor Hospital, Sheffield, South Yorkshire. Miss Kathy Crowhurst of West Hendon Hospital, London has been dependent upon a respirator since July 1957. Paul Bates of Horsham, West Sussex was harnessed to a mechanical positive pressure respirator on 13 Aug 1954. He has received an estimated 205,903,313 respirations into his lungs *via* his trachea up to 1 May 1982.

Fastest nerve impulses

The results of experiments published in 1966 have shown that the fastest messages transmitted by the human nervous system travel as fast as 180 mph 288 km/h. With advancing age impulses are carried 15 per cent more slowly.

Hiccoughing

The longest recorded attack of hiccoughs or singultus is that afflicting Charles Osborne (b. 1894) of Anthon, Iowa, USA, from 1922 to date. He contracted it when slaughtering a hog and has hiccoughed about 420 million times in the interim period. He has been unable to find a cure, but has led a reasonably

normal life in which he has had two wives and fathered eight children. He does admit, however, that he cannot keep in his false teeth.

Sneezing

The most chronic sneezing fit ever recorded is that of Donna Griffiths (b. 1969) of Pershore, Hereford & Worcester. She started sneezing on 13 Jan 1981 and surpassed the previous duration record of 194 days on 27 July 1981. She sneezed an estimated million times in the first 365 days. The highest speed at which expelled particles have been measured to travel is 103.6 mph 167 km/h.

Snoring Loudest

Research at the Ear, Nose and Throat Department of St Mary's Hospital, London, published in November 1968, shows that a rasping snore can attain a loudness of 69 decibels (*cf.* 70–90 for a pneumatic drill).

Yawning

In Lee's case, reported in 1888, a 15-year-old female patient yawned continuously for a period of 5 weeks.

Sleeplessness

Researches indicate that on the Circadian cycle for the majority peak efficiency is attained between 8 and 9 p.m. and the low point comes at 4 a.m. The longest recorded period for which a person has voluntarily gone without sleep is 449 hr (18 days 17 hr) by Mrs Maureen Weston of Peterborough, Cambridgeshire in a rocking chair marathon on 14 Apr–2 May 1977. Though she tended to hallucinate toward the end of this surely ill-advised test, she surprisingly suffered no lasting ill-effects. W. Ananda Upali of Veyangoda, Sri Lanka voluntarily went without sleep for 353 hr 10 min (14 days 17 hr 10 min) from 20 Aug to 4 Sept 1979. Victims of the very rare condition chronic colestites (total insomnia) have been known to go without sleep for many years without suffering any ill-effects. The most extreme recorded case is that of Mr Valentine Medina (b. 23 Feb 1900) of Cuenca, central Spain, who claims he lost all desire to sleep in 1904 and has not slept since. During the day he works on his farm, and at night patrols the village as a watchman. 'I've taken sleeping pills until I rattle,' he says, 'but it does no good.'

Motionlessness

The longest that anyone has continuously remained motionless is 8 hr 35 min by William A. Fuqua of Corpus Christi, Texas before a crowd of 4000 in Glendale Gallery and Mall, California, USA from 9 am to 7 pm on 28 May 1982. After a 4 min break he remained motionless for a further 91 min. The longest recorded case of involuntarily being made to stand to attention was when Staff Sgt Samuel B. Moody USAF, was so punished in Narumi prison camp, Nagoya, Japan for 53 hr in Spring of 1945. He survived to write *Reprieve from Hell*.

Swallowing

The worst reported case of compulsive swallowing was an insane female Mrs H. aged 42, who complained of a 'slight abdominal



Donna Griffiths of Pershore on her way to becoming an unenviable world record-holder. (V. Willcox)

pain'. She proved to have 2533 objects, including 947 bent pins, in her stomach. These were removed by Drs Chalk and Foucar in June 1927 at the Ontario Hospital, Canada. The heaviest object extracted from a human stomach has been a 5 lb 3 oz 2,530 kg ball of hair in Swain's case from a 20-year-old female compulsive swallower in the South Devon and East Cornwall Hospital, England on 30 Mar 1895.

Sword

'Count Desmond' (b. 1941 of Birmingham, NY, USA) swallowed thirteen 23 in 58.4 cm long blades to below his xiphisternum and injured himself in the process. *This category has now been retired and no further claims will be entertained.*

Fasting

Most humans experience considerable discomfort after an abstinence from food for even 12 hr but this often passes off after 24-48 hr. Records claimed without unremitting medical surveillance are of little value. The longest period for which anyone has gone without solid food is 382 days by Angus Barbieri (b. 1940) of Tayport, Fife, who lived on tea, coffee, water, soda water and vitamins in Maryfield Hospital, Dundee, Angus, from June 1965 to July 1966. His weight declined from 33 st 10 lb 214.1 kg to 12 st 10 lb 8.74 kg.

Hunger strike

The longest recorded hunger strike was one of 94 days by John and Peter Crowley, Thomas Donovan, Michael Burke, Michael O'Reilly, Christopher Upton, John Power, Joseph Kenny and Seán Hennessy in Cork Prison, Ireland, from 11 Aug to 12 Nov 1920. These nine survivors from 12 prisoners owed their lives to expert medical attention and an appeal by Arthur Griffith. The longest recorded hunger strike in a British gaol is 385 days from 28 June 1972 to 18 July 1973 by Denis Galer Goodwin in Wakefield Prison, West Yorkshire protesting his innocence of a rape charge. He was fed by tube orally.

The longest recorded case of survival without food and water is 18 days by Andreas Mihavecz, 18, of Bregenz, Austria who was put into a holding cell on 1 Apr 1979 in a local government building in Höchst, Austria but was totally forgotten by the police. On 18 Apr 1979 he was discovered close to death having had neither food nor water. He had been a passenger in a crashed car.

Most voracious fire eaters

Jon Zealando (NZ) blew a flame from his mouth to a distance of 24½ ft 7.45 m at the Henderson Square Shopping Centre, Auckland on 19 Oct 1979. Jack Sholomir of Newport, Gwent set the formal world record by igniting a bale of straw at a range of 23 feet 7.01 m at Kinnersley, Hereford and Worcester on 6 June 1977. Reg Morris (alias Sam's Son) extinguished 7225 torches of flame successively in his mouth in 2 hr at the Railway Tavern, Brownhills, West Midlands on 11 Mar 1982. On 13 Feb 1982 at the 'Six Bells' Stoke Poges, Bucks, Jean Chapman set a female record of 6607.

Human salamanders

The highest dry-air temperature endured by naked men in the US Air Force experiments in 1960 was 400° F 204.4° C and for heavily clothed men 500° F 260° C. Steaks require only 325° F 162.8° C. Temperatures of 140° C 284° F have been found quite bearable in *Sauna* baths.

The highest temperature recorded by pyrometer for the coals in any fire walk was 1494° F 812° C for a walk by 'Komar' (Vernon E. Craig) of Wooster, Ohio at the International Festival of Yoga and Esoteric Sciences, Maidenhead, England on 14 Aug 1976.

Underwater

The world record for voluntarily staying underwater is 13 min 42.5 sec by Robert Foster, aged 32, an electronics technician of Richmond, California, who stayed under 10 ft 3.05 m of water in the swimming pool of the Bermuda Palms Motel at San Rafael, California, USA, on 15 Mar 1959. He hyperventilated with oxygen for 30 min before his descent.

g forces

The acceleration g, due to gravity, is 32 ft 1.05 in per sec per sec 978.02 cm/sec² at sea-level at the Equator. A sustained acceleration of 25 g was withstood in a dry capsule during astronautic

research by Dr Carter Collins of California, USA. The highest g value endured on a water-braked rocket sled is 32.6 g for 0.04 of a sec by Eli L. Beeding Jr. at Holloman Air Force Base, New Mexico, USA, on 16 May 1958. He was put in hospital for 3 days. A man who fell off a 185 ft 56.39 m cliff (before 1963) has survived a momentary g of 209 in decelerating from 68 mph 109 km/h to stationary in 0.015 of a sec.

The racing driver David Purley GM survived a deceleration from 108 mph 173 km/h to zero in 26 in 66 cm in a crash at Silverstone on 13 July 1977 which involved a force of 179.8 g. He suffered 29 fractures, 3 dislocations and 6 heart stoppages.

The land divers of Penecost Island, New Hebrides dive from platforms 70 ft 21.3 m high with liana vines attached to their ankles. The jerk can transmit a momentary g force in excess of 100.

Electric shock Highest voltage

The worst reported shock received from a power line was one of 230,000 volts by Brian Latasa, 17, on the tower of ultra-high-voltage in Griffith Park, Los Angeles on 9 Nov 1967. Highly insulated individuals have touched 1,200,000 volt cables in bare-hand live cable work without harm.

Isolation

The longest recorded period for which any volunteer has been able to withstand total deprivation of all sensory stimulation (sight, hearing and touch) is 92 hr, recorded in 1962 at Lancaster Moor Hospital, Lancashire.

The farthest that any human has been isolated from all other humans has been the lone pilots of lunar command modules when antipodal to their Apollo missions, two lunar explorers 2200 miles 3540 km distant.

Pill-taking

The highest recorded total of pills swallowed by a patient is 386,436 between 9 June 1967 and 1 Jan 1982 by C. H. A. Kilner (b. 1926) of Bindura, Zimbabwe, following a successful operation to remove a cancerous pancreas on 26 May 1966.

Most injections

The diabetic Mrs Evelyn Ruth Winder (b. 1922) of Invercargill, New Zealand gave an estimated 54,920 insulin injections to herself over 51 years to May 1982.

Most tattoos

The seeming ultimate in being tattooed is represented by Wilfred Hardy of Huthwaite, Nottinghamshire, England. Not content with a perilous approach to within 4% of totality, he has been tattooed on the inside of his cheek, his tongue, gums and eyebrows. Britain's most decorated woman is Mrs Rusty Skuse née Field (b. 1944) of Aldershot, Hampshire, who after 12 years under the needle of Mr Skuse, has come within 15 per cent of totality. He stated he always had designs on her.

OPERATIONS

Longest

The most protracted reported operation, for surgical as opposed to medical control purposes, has been one of 96 hr performed on Mrs Gertrude Levandowski (see p. 14) during the period 4-8 Feb 1951. The patient suffered from a weak heart and the surgeons had to exercise the utmost caution during the operation.

The 'slowest' operation on record is one on the feet of Mrs Doreen Scott of Derby, England on 20 Nov 1981. She had been waiting since 10 Mar 1952.

Most

Alton Godwin (b. 17 Aug 1945) underwent 112 operations between 25 Mar 1980 and January 1982 to remove scar tissue from his throat following an oxygen explosion during micro-surgery by laser in the Pittsburgh Eye and Ear Hospital.

Oldest subject

The greatest recorded age at which a person has been subjected to an operation is 111 years 105 days in the case of James Henry Brett, Jr (b. 25 July 1849, d. 10 Feb 1961) of Houston, Texas, USA. He underwent a hip operation on 7 Nov 1960. The oldest

age established in Britain was the case of Miss Mary Wright (b. 28 Feb 1862) who died during a thigh operation at Boston, Lincolnshire on 22 Apr 1971 aged 109 years 53 days.

Heart transplant *Earliest and longest surviving*

The first human heart transplant operation was performed on Louis Washkansky, aged 55, at the Groote Schuur Hospital Cape Town, South Africa, between 1.00 a.m. and 6 a.m., on 3 Dec 1967, by a team of 30 headed by Prof. Christiaan Neethling Barnard (b. Beaufort West, South Africa, 8 Oct 1922). The donor was Miss Denise Ann Darvall, aged 25. Washkansky died on 21 Dec 1967. The longest surviving heart transplantee has been Emmanuel Vitria, of Marseilles, France who received a heart transplant on 28 Nov 1968 and entered the fourteenth year of his new life in 1981. Britain's longest-surviving heart transplant patient is Mr Keith Castle (b. 1927) of Battersea, London who received his new heart on 18 Aug 1979 at Papworth Hospital, Cambridge.

Earliest kidney transplant

R. H. Lawler (b. 1895) (USA) performed the first homo transplantation of the kidney in the human in 1950. The longest survival, as between identical twins, has been 20 years.

Earliest appendicectomy

The earliest recorded successful appendix operation was performed in 1736 by Claudius Amyand (1680–1740). He was Serjeant Surgeon to King George II (reigned 1727–60).

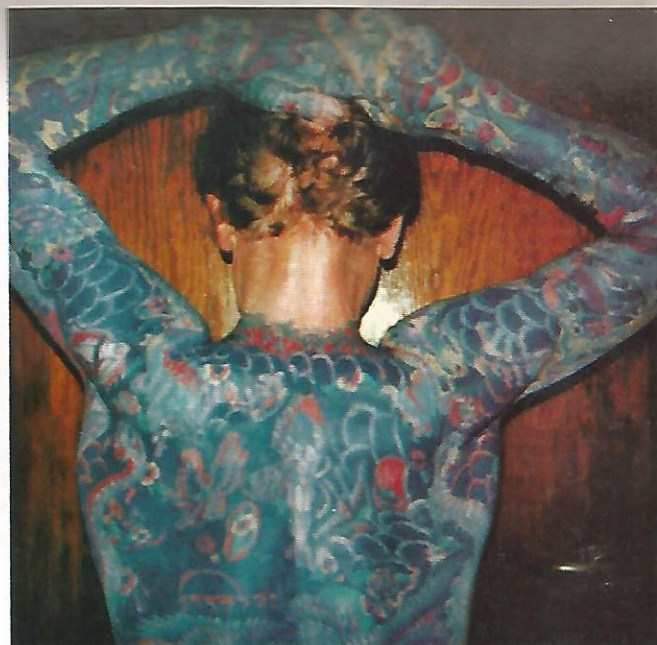
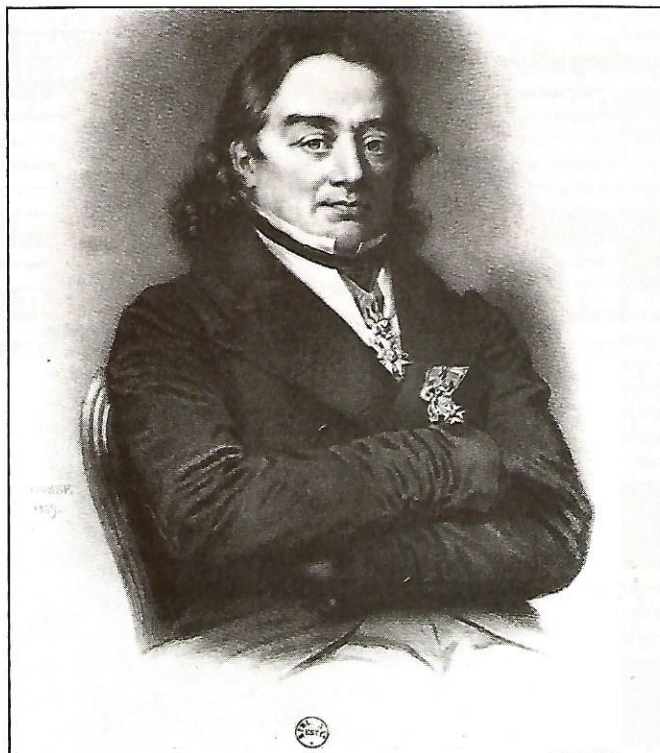
Earliest anaesthesia

The earliest recorded operation under general anaesthesia was for the removal of a cyst from the neck of James Venable by Dr Crawford Williamson Long (1815–78), using diethyl ether ($C_2H_5)_2O$, in Jefferson, Georgia, USA, on 30 Mar 1842. The earliest amputation under an anaesthetic in Great Britain was by Dr William Scott and Dr James McLauchlan at the Dumfries and Galloway Infirmary, Scotland on 19 Dec 1846.

Most durable cancer patient

The most extreme recorded case of survival from diagnosed cancer is that of Mrs Winona Mildred Melick (*née* Douglass) (b. 22 Oct. 1876) of Long Beach, California. She had four cancer operations in 1918, 1933, 1966 and 1968 but died from pneumonia on 28 Dec 1981, 67 days after her 105th birthday.

Dominique Larrey, Napoleon's surgeon, whose high speed amputations were much admired before the discovery of anaesthetics.



The world's most decorated man, Wilfred Hardy of Huthwaite, Nottinghamshire, who has been tattooed to within 4 percent of totality and even inside his mouth (see p. 24).

Laryngectomy

On 24 July 1924 John I. Poole of Plymouth, Devon after diagnosis of carcinoma, then aged 33 underwent total laryngectomy in Edinburgh. He died on 19 June 1979 after surviving nearly 55 years as a 'neck-breather'.

Fastest amputation

The shortest time recorded for a leg amputation in the pre-anaesthetic era was 13–15 sec by Napoleon's chief surgeon Dominique Larrey. There could have been no ligation.

Surgical instruments

The largest surgical instruments are robot retractors used in abdominal surgery introduced by Abbey Surgical Instruments of Chingford, Essex in 1968 and weighing 11 lb 5 kg. Some bronchoscopic forceps measure 60 cm $23\frac{1}{2}$ in in length. The smallest are Elliot's eye trephine, which has a blade 0.078 in 0.20 cm in diameter and 'straight' stapes picks with a needle-type tip or blade of 0.3 mm 0.013 in long.

PSYCHIC FORCES

Extra-sensory perception

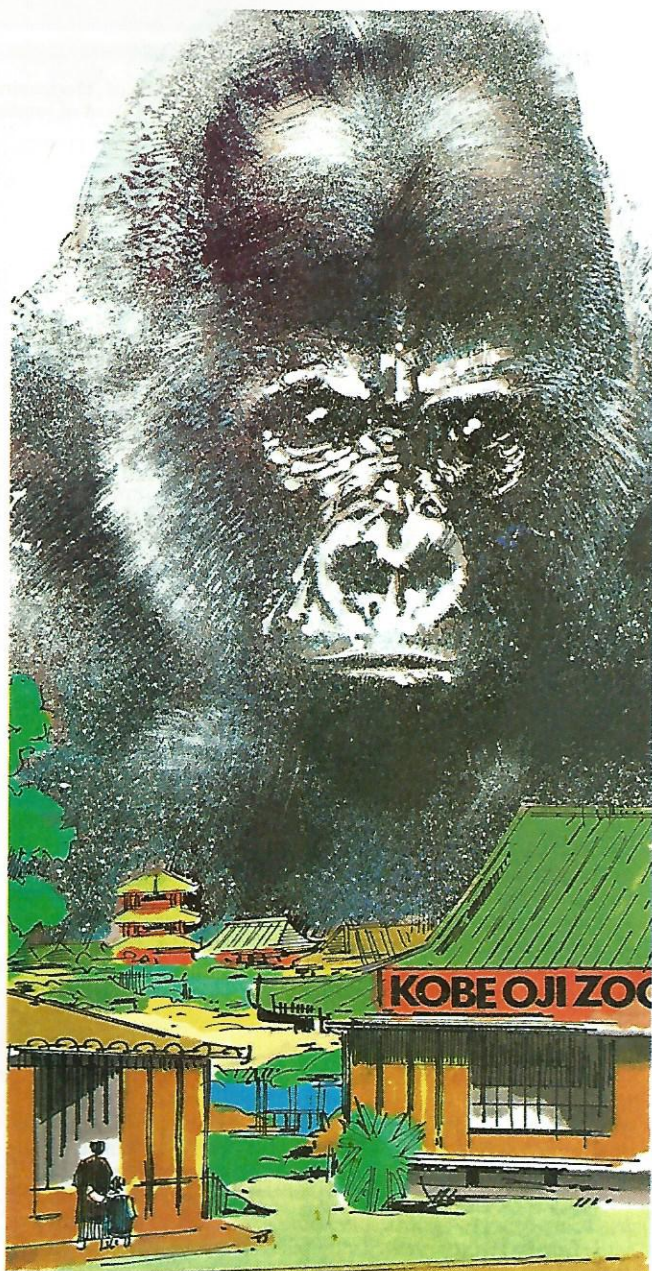
The two most extreme published examples of ESP in scientific literature have been those of the Reiss case of a 26 year old female at Hunter College, New York State, USA in 1936 and of Pavel Stepánek (Czechoslovakia) in 1967–68. The importance which might be attached to their cases was diminished by subsequent developments. The Reiss subject refused to undergo any further tests under stricter conditions. When Stepánek was retested at Edinburgh University with plastic cards he 'failed to display any clairvoyant ability'. Much smaller departures from the laws of probability have however been displayed in less extreme cases carried out under strict conditions.

Most durable ghosts

Ghosts are not immortal and, according to the *Gazetteer of British Ghosts*, seem to deteriorate after 400 years. The most outstanding exception to their normal 'half-life' would be the ghosts of Roman soldiers thrice reported still marching through the cellars of the Treasurer's House, York Minster after nearly 19 centuries. The book's author, Peter Underwood, states that Britain has more reported ghosts per square mile than any other country with Borley Rectory near Long Melford, Suffolk the site of unrivalled activity between 1863 and its destruction by fire in 1939. Andrew M. Green, author of *Ghost Hunting, A Practical Guide* claims to possess the only known letter from a *poltergeist*.

2. The Living World

GUINNESS BOOK OF RECORDS



Heaviest gorilla in captivity

ANIMAL KINGDOM GENERAL RECORDS

Note—Guinness Superlatives Ltd has published a specialist volume entitled The Guinness Book of Animal Facts and Feats (3rd Edition) by Gerald L. Wood (price 25.95). This work treats the dimensions and performances of the Classes of the Animal Kingdom in greater detail, giving also the sources and authorities for much of the material in this chapter.

Largest and heaviest

The largest and heaviest animal in the world is the Blue or Sulphur-bottom whale (*Balaenoptera musculus*), also called Sibbald's rorqual. The largest specimen ever recorded was a female landed at the Cia Argentina de Pesca, South Georgia some time in the period 1904–20 which measured 107 Norwegian fot 33,58 m 110 ft 2½ in in length. Another female measuring 27,6 m 90 ft 6 in caught in the Southern Ocean by the Soviet *Slava* whaling fleet on 20 Mar 1947, weighed 190 tonnes 187 tons.

The whistle measured up to 188 dB is the loudest sound emitted by any living source and its detectible 850 km 530 miles distant.

Tallest

The tallest living animal is the giraffe (*Giraffa camelopardalis*), which is now found only in the dry savannah and semi-desert areas of Africa south of the Sahara. The tallest ever recorded was a Masai bull (*G. camelopardalis tippelskirchi*) named 'George', received at Chester Zoo, England on 8 Jan 1959 from Kenya. His 'horns' almost touched the roof of the 20 ft 6,09 m high Giraffe House when he was 9 years old. George died on 22 July 1969. Less credible heights of up to 23 ft 7 m (between pegs) have been claimed for bulls shot in the field.

Longest

The longest animal ever recorded is the ribbon worm *Lineus longissimus* also known as the 'Boot-lace worm', which is found in the shallow coastal waters of the North Sea. In 1864 a specimen measuring more than 180 ft 54 m was washed ashore at St Andrews, Fifeshire, Scotland after a storm.

Rarest

The best claimants to the title of the world's rarest land animal are those species which are known only from a single (holotype) specimen. One of these is Fontoynont's hedgehog-tenrec *Dasogale fontoynonti*, which is known only from a specimen collected in eastern Madagascar (Malagasy Republic) and now preserved in the Museum d'Histoire Naturelle, Paris.

Commonest

It has been estimated that man shares the earth with about 3,000,000,000,000,000,000,000,000,000,000,000,000 (3000 quintillion or 3×10^{33}) other living things. The number of nematode sea-worms has been estimated at 4×10^{25} .

Largest concentration

The largest single concentration of animals ever recorded was an enormous swarm of krill (*Euphausia superba*) estimated to weigh 10 million tons/tonnes tracked by American scientists off Antarctica in March 1981. The swarm was so dense it equalled about one-seventh of the world's yearly catch of fish and shellfish.

Bos grunniens, more commonly known as the Yak, is the mammal living at the greatest altitude. It can browse at 20,000 ft 6100 m (see p. 29). (Heather Angel)



Fastest

The fastest-moving animal is the Peregrine falcon (*Falco peregrinus*), which has been timed electronically at 350 km/h 217 mph in 1963–7 in Germany while making a stoop at a 45° angle of descent. In a vertical fall of 5000 ft 1524 m, it has been calculated a stooping Peregrine in display could probably reach 230–240 mph 370–386 km/h, but it usually strikes its prey at about half this velocity. The fastest bird in level flight is the White-throated spintail swift (*Hirundapus caudacutus*) of Asia. In 1942 air speeds up to 171 km/h 106.25 mph were recorded for this species in the USSR (cf. 60 mph 96 km/h for the Peregrine). This bird has a blood temperature of 112.5°F 44.7°C.

Longest lived

Few non-bacterial creatures live longer than humans. It would appear that tortoises are the longest lived such animals. The greatest authentic age recorded for a tortoise is 152-plus years for a male Marion's tortoise (*Testudo sumeirii*) brought from the Seychelles to Mauritius in 1766 by the Chevalier de Fresne, who presented it to the Port Louis army garrison. This specimen (it went blind in 1908) was accidentally killed in 1918. When the famous Royal Tongan tortoise 'Tu'malilia' (believed to be a specimen of *Testudo radiata*) died on 19 May 1966 it was reputed to be over 200 years old, having been presented to the then King of Tonga by Captain James Cook (1728–79) on 22 Oct 1773, but this record may well have been conflated between two (or more) overlapping residents.

Heaviest brain

The Sperm whale (*Physeter macrocephalus*) has the heaviest brain of any living animal. The brain of a 49 ft 14.93 m bull processed in the Japanese factory ship *Nissin Maru No. 1* in the Antarctic on 11 Dec 1949 weighed 9.2 kg 20.24 lb compared with 6.9 kg 15.38 lb for a 90 ft 27 m Blue whale. The heaviest brain recorded for an elephant was an exceptional 16.5 lb 7.5 kg in the case of a 1.94 ton 1957 kg Asiatic cow. The brain of the adult bull African elephant is normally 9¼–12 lb 4.2–5.4 kg.

Largest eye

The giant squid (*Architeuthis* sp.) has the largest eye of any living animal. The ocular diameter may exceed 38 cm 15 in (cf. 30 cm 11.81 in for a 33½ long-playing record).

Largest egg

The largest egg of any living animal is that of the Whale shark (*Rhinochondra typus*). One egg case measuring 12 in by 5.5 in by 3.5 in 30 × 14 × 9 cm was picked up by the shrimp trawler *Doris* on 29 June 1953 at a depth of 31 fathoms (186 ft 56.6 m) in the Gulf of Mexico 130 miles 209 km south of Port Isabel, Texas, USA. The egg contained a perfect embryo of a Whale shark 13.78 in 35 cm long.

Longest gestation

The viviparous Alpine black salamander (*Salamandra atra*) has a gestation period of up to 38 months at altitudes above 1400 m 4600 ft in the Swiss Alps, but this drops to 24–26 months at lower altitudes.

Fastest and slowest growth

The fastest growth in the Animal Kingdom is that of the Blue whale calf (see p. 26). A barely visible ovum weighing a fraction of a milligramme (0.000035 oz) grows to a weight of c. 26 tons 26 tonnes in 22¾ months, made up of 10¾ months gestation and the first 12 months of life. This is equivalent to an increase of 30,000 million-fold. The slowest growth in the Animal Kingdom is that of the deep-sea clam *Tindaria callistiformis* of the North Atlantic, which takes an estimated 100 years to reach a length of 8 mm 0.31 in.

Greatest size difference between sexes

The largest female deep-sea angler fish of the species *Ceratias holboellii* on record weighed half a million times as much as the smallest known parasitic male. It has been suggested that this fish would make an appropriate emblem for the Women's Lib. Movement.

Highest g force

The highest force encountered in nature is the 400 g averaged by

the Click beetle *Ashmea kermorhoidalis* (a common British species) when 'jack-knifing' into the air to escape predators. One example measuring 12 mm 0.47 in in length and weighing 40 mg 0.00014 oz which jumped to a height of 30 cm 11¾ in was calculated to have 'endured' a peak brain deceleration of 2300 g at the end of the movement.

Blood temperatures

The highest mammalian blood temperature is that of the Domestic goat (*Capra hircus*) with an average of 103.8°F 39.9°C, and a normal range of 101.7°–105.3°F 38.7°–40.7°C. The lowest mammalian blood temperature is that of the Spiny anteater (*Tachyglossus aculeatus*), a monotreme found in Australia and New Guinea, with a normal range of 72°–87°F 22.2°–24.4°C. The blood temperature of the Golden hamster (*Mesocricetus auratus*) sometimes falls as low as 38.3°F 3.5°C during hibernation, and an extreme figure of 29.6°F 1.3°C has been reported for a Pipistrelle bat (*Pipistrellus pipistrellus*) during a cooling experiment.

Most prodigious eater

The most phenomenal eating machine in nature is the larva of the Polyphemus moth (*Antheraea polyphemus*) of North America which, in the first 48 hours of its life, consumes an amount equal to 86,000 times its own birthweight. In human terms, this would be equivalent to a 7 lb 3,17 kg baby taking in 269 tons 273 tonnes of nourishment!

Most valuable furs

The highest-priced animal pelts are those of the Sea otter (*Enhydra lutris*), also known as the Kamchatka beaver, which fetched up to \$2700 (then £675) before their 55-year-long protection started in 1912. The protection ended in 1967, and at the first legal auction of Sea otter pelts at Seattle, Washington, USA on 31 Jan 1968, Neiman-Marcus, the famous Dallas department store, paid \$9200 (then £3832) for four pelts from Alaska. In May 1970 a Kojah (a mink-sable cross) coat costing \$125,000 (then £52,083) was sold by Neiman-Marcus to Welsh actor Richard Burton for his then wife, Elizabeth Taylor.

Heaviest ambergris

The heaviest piece of ambergris (a fatty deposit in the intestine of the Sperm whale) on record was a 1003 lb 455 kg lump recovered from a Sperm whale (*Physeter macrocephalus*) taken in Australian waters on 3 Dec 1912 by a Norwegian whaling fleet. It was later sold in London for £23,000.

Most valuable

The most valuable animals in cash terms are thoroughbred racehorses. It was announced in October 1980 that *Easy Jet* (see Chap. XII Horseracing) had been syndicated for \$30 million (£14.2 million). The most valuable zoo exhibit is the Giant panda (*Ailuropoda melanoleuca*) for which \$250,000 (£104,160) was offered by the San Diego Zoological Gardens for a fertile pair in 1971. The most valuable marine exhibit is the Killer whale (*Orcinus orca*) 'Orky' at Marineland, Palos Verdes, Los Angeles. He has grown to 14,000 lb 6350 kg since 1964 and is valued at not less than \$250,000 (£115,000).

1. MAMMALS (*Mammalia*)

Largest and heaviest World

For details of the Blue whale (*Balaenoptera musculus*) see page 26. Further information: the tongue and heart of the 190 tonne 187 ton female taken by the *Slava* whaling fleet in the Southern Ocean on 20 Mar 1947 weighed 4.22 tons 4,29 tonnes and 1540 lb 698,5 kg respectively.

Largest and heaviest British waters

The largest Blue whale ever recorded in British waters was probably an 88 ft 26.8 m specimen killed near the Bunaveneader station in Harris in the Western Isles, Scotland in 1904. In Sept 1750 a Blue whale allegedly measuring 101 ft 30.75 m in length ran aground in the River Humber estuary. Another specimen stranded on the west coast of Lewis, Western Isles, Scotland in c. 1870 was credited with a length of 105 ft 32 m but the carcass

was cut up by the local people before the length could be verified. In both cases the length was probably exaggerated or taken along the curve of the body instead of in a straight line from the tip of the snout to the notch in the flukes. Four Blue whales have been stranded on British coasts since 1913, at least two of them after being harpooned by whalers. The last occurrence (c. 60 ft 18 m) was at Wick, Highland, Scotland on 15 Oct 1923.

Blue whales inhabit the colder seas and migrate to warmer waters in the winter for breeding. Observations made in the Antarctic in 1947–8 showed that a Blue whale can maintain a speed of 20 knots (23 mph 37 km/h) for 10 min when frightened. It has been calculated that a 90 ft 27 m Blue whale travelling at 20 knots 37 km/h would develop 520 hp 527 cv. Newborn calves measure 6.5–8.6 m 21 ft 3½ in–28 ft 6 in in length and weigh up to 3000 kg 2.95 tons.

It has been estimated that there were between 21,000 and 23,000 Blue whales living throughout the oceans in 1981. The species has been protected *de jure* since 1967, although non-member countries of the International Whaling Commission, e.g. Panama and Taiwan, are not bound by this agreement.

Deepest dive

The greatest recorded depth to which a whale has dived is 620 fathoms (3720 ft 1134 m) by a 47 ft 14.32 m bull Sperm whale (*Physeter macrocephalus*) found with its jaw entangled with a submarine cable running between Santa Elena, Ecuador and Chorrillos, Peru, on 14 Oct 1955. At this depth the whale withstood a pressure of 1680 lb/in² 118 kg/cm² of body surface. On 25 Aug 1969 another bull Sperm whale was killed 100 miles 160 km south of Durban after it had surfaced from a dive lasting 1 hr 52 min, and inside its stomach were found two small sharks which had been swallowed about an hour earlier. These were later identified as *Scymnodon* sp., a species found only on the sea floor. At this point from land the depth of water is in excess of 1646 fathoms (10,476 ft 3193 m) for a radius of 30–40 miles 48–64 km, which now suggests that the Sperm whale sometimes may descend to a depth of over 10,000 ft 3000 m when seeking food.

Largest on land World

The largest living land animal is the African bush elephant (*Loxodonta africana*). The average adult bull stands 10 ft 6 in 3.2 m at the shoulder and weighs 5.6 tons 5.7 tonnes. The largest specimen ever recorded, and the largest land animal of modern times, was a bull shot 25 miles 40 km north-northeast of Mucusso, southern Angola on 7 Nov 1974. Lying on its side this elephant measured 13 ft 8 in 4.16 m in a projected line from the highest point of the shoulder to the base of the forefoot, indicating that its standing height must have been about 13 ft 3.96 m. Other measurements included an over-all length of 35 ft 10.67 m (tip of extended trunk to tip of extended tail) and a fore-foot circumference of 5 ft 11 in 1.80 m. The weight was computed to be 26,998 lb (12.05 tons, 12.24 tonnes) (see also Shooting, Chapter 12).

Largest on land Britain

The largest wild mammal in the British Isles is the Red deer (*Cervus elaphus*). A full-grown stag stands 3 ft 8 in 1.11 m at the shoulder and weighs 230–250 lb 104–113 kg. The heaviest ever recorded was probably a stag killed at Glenfiddich, Banff, Scotland in 1831, which weighed 525 lb 238 kg. The heaviest park Red deer on record was a stag weighing 476 lb 215 kg (height at shoulder 4 ft 6 in 1.37 m) killed at Woburn, Bedfordshire in 1836. The so-called wild pony (*Equus caballus*) may weigh up to 700 lb 320 kg but there are no truly feral populations living today.

Tallest

The tallest mammal is the giraffe (*Giraffa camelopardalis*). For details see p. 26.

Smallest Land

The smallest recorded land mammal is the endangered Kitti's hog-nosed bat (*Craseonycteris thonglongyai*) or Bumblebee bat, which is now restricted to one cave near the forestry station at Ban Sai Yoke on the Kwae Noi River, Kanchanaburi, Thailand. Mature specimens (both sexes) have a wing span of c. 160 mm

6.29 in and weigh 1.75–2 g 0.062–0.071 oz. The smallest mammal found in the British Isles is the European pygmy shrew (*Sorex minimus*). Mature specimens have a head and body length of 43–64 mm 1.69–2.5 in, a tail length of 31–46 mm 1.22–1.81 in and weigh between 2.4 and 6.1 g 0.084 and 0.213 oz.

Smallest Marine

The smallest totally marine mammal in terms of weight is probably Commerson's dolphin (*Cephalorhynchus commersoni*) also known as Le Jacobite, which is found in the waters off the southern tip of South America. In one series of six adult specimens the weights ranged from 23 kg 50.7 lb to 35 kg 77.1 lb. The Sea otter (*Enhydra lutris*) of the north Pacific is of comparable size (55–81.4 lb 25–38.5 kg), but this species sometimes comes ashore during storms.

Rarest

A number of mammals are known only from a single (holotype) specimen, including Fontoynont's hedgehog-tenrec, (*Dasogale fontoynonti*) (see p. 26). Among sub-species, the Javan tiger (*Panthera tigris sondaica*) was reduced to 4 specimens by January 1980, all of them in the Meru Betiri reserve in eastern Java, but none have been sighted since. In 1979 scientists uncovered the first evidence that the Bali leopard (*Panthera pardus balica*) still existed on the island. The Arabian oryx (*Oryx leucoryx*) has not been reported in the wild since 3 were killed and 4 captured in South Oman in 1972. In February 1982 thirteen oryx from the herd at San Diego Zoo plus 2 calves born in Oman were waiting to be released into the open desert.

Britain's rarest native mammal is Bechstein's bat (*Myotis bechsteini*) (see p. 31).

Fastest World

The fastest of all land animals over a short distance (i.e. up to 600 yd 549 m) is the Cheetah or Hunting leopard (*Acinonyx jubatus*) of the open plains of East Africa, Iran, Turkmenia and Afghanistan, with a probable maximum speed of 60–63 mph 96–101 km/h over suitably level ground. Speeds of 71, 84 and even 90 mph, 114, 135 and 145 km/h have been claimed for this animal, but these figures must be considered exaggerated. Tests in London in 1937 showed that on an oval greyhound track over 345 yd 316 m a female cheetah's average speed over three runs was 43.4 mph 69.8 km/h (cf. 43.26 mph 69.6 km/h for the fastest racehorse), but this specimen was not running flat out and had great difficulty negotiating the bends. The fastest land animal over a sustained distance (i.e. 1000 yd 914 m or more) is the Pronghorn antelope (*Antilocapra americana*) of the western United States. Specimens have been observed to travel at 35 mph for 4 miles 56 km/h for 6 km, at 42 mph for 1 mile 67 km/h for 1.6 km and 55 mph for half a mile 88.5 km/h for 0.8 km.

Fastest Britain

The fastest British land mammal over a sustained distance is the Roe deer (*Capreolus capreolus*), which can cruise at 25–30 mph 40–48 km/h for more than 20 miles 32 km, with occasional bursts of up to 40 mph 64 km/h. On 19 Oct 1970 a frightened runaway Red deer (*Cervus elaphus*) registered a speed of 42 mph 67.5 km/h on a police radar trap as it charged through a street in Stalybridge, Greater Manchester.

Slowest

The slowest moving land mammal is the Ai or Three-toed sloth (*Bradypus tridactylus*) of tropical America. The average ground speed is 6–8 ft 1.83–2.44 m a minute (0.068–0.098 mph 0.109–0.158 km/h), but in the trees it can 'accelerate' to 15 ft 4.57 m a minute (0.17 mph 0.272 km/h) (cf. these figures with the 0.03 mph 0.05 km/h of the common garden snail and the 0.17 mph 0.27 km/h of the giant tortoise).

Longest lived

No other mammal can match the extreme proven 117 years attained by Man (*Homo sapiens*) (see pp. 16 and 17). It is probable that the closest approach is among Blue and Fin whales (*Balaenoptera musculus* and *B. physalus*). Studies of the annual growth layers or laminations found in the wax-like plug deposited in the outer ear indicate a maximum life-span of 90–100 years.

The longest-living land mammal, excluding Man, is the Asiatic elephant (*Elephas maximus*). The greatest age that has been verified with absolute certainty is 78 years in the case of a cow named 'Modoc', who died at Santa Clara, California, USA on 17 July 1975. She was imported into the USA from Germany in 1898 at the age of two.

Highest living

The highest living wild mammal in the world is probably the Yak (*Bos grunniens*), of Tibet and the Szechwanese Alps, China, which occasionally climbs to an altitude of 20,000 ft 6100 m when foraging. The Bharal (*Pseudois nayaur*) and the Pika or Mouse hare (*Ochotona thibetana*) may also reach this height in the Himalayas. In 1890 the tracks of an elephant were found at 15,000 ft 4750 m on Kilimanjaro, Tanzania.

Largest herds

The largest herds on record were those of the Springbok (*Antidorcas marsupialis*) during migration across the plains of the western parts of southern Africa in the 19th century. In 1849 John (later Sir John) Fraser observed a *trekbokken* that took three days to pass through the settlement of Beaufort West, Cape Province. Another herd seen moving near Nels Poortje, Cape Province in 1888 was estimated to contain 100,000,000 head, although 10,000,000 is probably a more realistic figure. A herd estimated to be 15 miles 24 km wide and more than 100 miles 160 km long was reported from Karree Kloof, Orange River, South Africa in July 1896.

The largest concentration of wild mammals found living anywhere in the world today is that of the Brazilian free-tailed Bat (*Tadarida brasiliensis*) in Bracken Cave, San Antonio, Texas, USA, where up to twenty million animals assemble after migration.

Longest and shortest gestation periods

The longest of all mammalian gestation periods is that of the Asiatic elephant (*Elephas maximus*), with an average of 609 days or just over 20 months and a maximum of 760 days—more than two and a half times that of a human. The gestation period of the American opossum (*Didelphis marsupialis*), also called the Virginian opossum, is normally 12–13 days but may be as short as 8 days.

The gestation periods of the rare Water opossum or Yapok (*Chironectes minimus*) of Central and northern South America (average 12–13 days) and the Eastern native cat (*Dasyurus viverrinus*) of Australia (average 12 days) may also be as short as 8 days.

Largest litter

The greatest recorded number of young born to a wild mammal at a single birth is 32 (not all of which survived) in the case of the Common tenrec (*Centetes ecaudatus*) found in Madagascar and the Comoro Islands. The average litter is 12–16. In March 1961 a litter of 32 was also reported for a House mouse (*Mus musculus*) at the Roswell Park Memorial Institute in Buffalo, NY, USA (average litter 13–21) (see also Chapter 9 Agriculture, prolificacy records—pigs).

Youngest breeder

The Streaked tenrec (*Hemicentetes semispinosus*) of Madagascar is weaned after only 5 days, and females are capable of breeding 3–4 weeks after birth.

CARNIVORES

Largest Land World

The largest living terrestrial carnivore is the Kodiak bear (*Ursus arctos middendorffi*), which is found on Kodiak Island and the adjacent Afognak and Shuyak islands in the Gulf of Alaska, USA. The average adult male has a nose to tail length of 8 ft 2.4 m (tail about 4 in 10 cm), stands 52 in 132 cm at the shoulder and weighs between 1050 and 1175 lb 476–533 kg. In 1894 a weight of 1656 lb 751 kg was recorded for a male shot at English Bay, Kodiak Island, whose stretched skin measured 13 ft 6 in 4.11 m from the tip of the nose to the root of the tail. This weight was exceeded by a 'cage-fat' male in the Cheyenne Mountain Zoological Park, Colorado Springs, Colorado, USA which scaled 1670 lb 757 kg at the time of its death on 22 Sept 1955.



The rare Bumblebee bat, the smallest of all mammals, discovered in Thailand by Kittu Thonglongya in October 1973 (see p. 28).

Weights in excess of 1600 lb 725 kg have also been reported for the Polar bear (*Ursus maritimus*), but the average adult male weighs 850–900 lb 386–408 kg and measures 7¾ ft 2.4 m nose to tail. In 1960 a Polar bear allegedly weighing 2210 lb 1002 kg before skinning was shot at the polar entrance to Kotzebue Sound, north-west Alaska. The mounted specimen has a standing height of 11 ft 1¼ in 3.38 m.

Largest Land Britain

The largest land carnivore found in Britain is the Badger (*Meles meles*). The average adult boar (sows are slightly smaller) measures 3 ft 90 cm in length—including a 4 in 10 cm tail—and weighs 27 lb 12.3 kg in the early spring and 32 lb 14.5 kg at the end of the summer when it is in 'grease'. In December 1952 a boar weighing exactly 60 lb 27.2 kg was killed near Rotherham, South Yorkshire.

Largest Marine

The largest toothed mammal ever recorded is the Sperm whale (*Physeter macrocephalus*), also called the cachalot. The average adult bull measures 47 ft 14.3 m in length and weighs about 33 tons 33.5 tonnes. The largest accurately measured specimen on record was a 67 ft 11 in 20.7 m bull captured off the Kurile Islands, north-west Pacific, by a USSR whaling fleet in the summer of 1950. Twelve cachalots have been stranded on British coasts since 1913. The largest, a bull measuring 61 ft 5 in 19 m, was washed ashore at Birchington, Kent on 18 Oct 1914. Another bull estimated at 65 ft 19.8 m but badly decomposed was stranded at Ferryloughan, Co. Galway, Ireland on 2 Jan 1952.

Smallest

The smallest living member of the Order Carnivora is the Least weasel (*Mustela rixosa*), also called the Dwarf weasel, which is circumpolar in distribution. Four races are recognised, the smallest of which is *M. r. pygmaea* of Siberia. Mature specimens have an overall length of 177–207 mm 6.96–8.14 in and weigh between 35 and 70 g 1¼–2½ oz.

Largest feline

The largest member of the cat family (Felidae) is the long-furred Siberian tiger (*Panthera tigris altaica*), also called the Amur or Manchurian tiger. Adult males average 10 ft 4 in 3.15 m in length (nose to tip of extended tail), stand 39–42 in 99–107 cm at

the shoulder and weigh about 585 lb 265 kg. In 1950 a male weighing 384 kg 846.5 lb was shot in the Sikhote Alin Mts, Maritime Territory, USSR. In November 1967 David H. Hassinger of Philadelphia, USA shot an outsized Indian tiger (*Panthera tigris tigris*) in northern Uttar Pradesh which measured 10 ft 7 in 3.22 m between pegs (11 ft 1 in 3.37 m over the curves) and weighed 857 lb 388.7 kg (cf. 9 ft 3 in 2.82 m and 420 lb 190 kg for average adult male). It is now on display in the US Museum of Natural History, Smithsonian Institution, Washington, DC.

The average adult African lion (*Panthera leo*) measures 9 ft 2.7 m overall, stands 36–38 in 91–97 cm at the shoulder and weighs 400–410 lb 181–185 kg. The heaviest wild specimen on record was one weighing 690 lb 313 kg shot by Mr Lennox Anderson just outside Hectorspruit in the eastern Transvaal, South Africa in 1936. In July 1970 a weight of 826 lb 375 kg was reported for a black-maned lion named 'Simba' (b. Dublin Zoo, 1959) at Colchester Zoo, Essex. He died on 16 Jan 1973 at Knaresborough Zoo, North Yorkshire, where his stuffed body is currently on display.

Smallest feline

The smallest member of the cat family is the Rusty-spotted cat (*Felis rubiginosa*) of southern India and Sri Lanka. The average adult male has an overall length of 25–28 in 64–71 cm (tail 9–10 in 23–25 cm) and weighs about 3 lb 1.35 kg.

PINNIPEDS (Seals, Sea-lions and Walruses)

Largest World

The largest of the 32 known species of pinniped is the Southern elephant seal (*Mirounga leonina*), which inhabits the sub-Antarctic islands. Adult bulls average 16½ ft 5 m in length (tip of inflated snout to the extremities of the outstretched tail flippers), 12 ft 3.7 m in maximum bodily girth and weigh about 5000 lb (2.18 tons 2 268 kg). The largest accurately measured specimen on record was a bull killed in Possession Bay, South Georgia on 28 Feb 1913 which measured 21 ft 4 in 6.5 m after flensing (original length about 22½ ft 6.85 m) and probably weighed at least 4 tons/tonnes. There are old records of bulls measuring 25–30 ft 7.62–9.14 m and even 35 ft 10.66 m but these figures must be considered exaggerated.

Largest British

The largest pinniped among British fauna is the Grey seal (*Halichoerus grypus*), also called the Atlantic seal. In 1772 an extremely bulky bull measuring 9 ft 2.74 m in length, 7 ft 6 in 2.28 m in maximum bodily girth and weighing 658 lb 298 kg was killed in the Farne Islands.

Smallest World

The smallest pinnipeds are the Baikal seal (*Pusa sibirica*) of Lake Baykal, USSR and the Ringed seal (*Pusa hispida*) of the Arctic. Adult specimens measure up to 5 ft 6 in 1.67 m and weigh up to 280 lb 127 kg.

Smallest British

Britain's smallest pinniped is the Common seal (*Phoca vitulina*). Adult bulls measure 5½–6 ft 1.68–1.83 m in length and weigh up to 231 lb 105 kg.

Most abundant

The most abundant species of pinniped is the Crabeater seal (*Lobodon carcinophagus*) of Antarctica. In 1978 the total population was believed to be nearly 15,000,000.

Rarest

In 1976 a single specimen of the Caribbean or West Indian monk seal (*Monachus tropicalis*) was sighted between Punta Gorda, Belize and Livingston, Guatemala.

Fastest and deepest

The highest swimming speed recorded for a pinniped is 25 mph 40 km/h for a Californian sea lion (*Zalophus californianus*). The deepest dive recorded for a pinniped is 600 m 1968 ft for a bull Weddell seal (*Leptonychotes weddelli*) in McMurdo Sound, Antarctica in March 1966. At this depth the seal withstood a pressure of 875 lb/in² 6033 kPa of body area. The exceptionally large eyes of the Southern elephant seal (*Mirounga leonina*), point to a deep-diving ability, and unconfirmed measurements down to 2000 ft 609 m have been claimed.

Longest lived

A female Grey seal (*Halichoerus grypus*) shot at Shann Wick in the Shetland Islands on 23 Apr 1969 was believed to be 'at least 46 years old' based on a count of dental annuli.

BATS

Largest World

The only flying mammals are bats (order Chiroptera), of which there are about 1000 living species. That with the greatest wing span is the Bismarck flying fox (*Pteropus neohibernicus*) of the Bismarck Archipelago and New Guinea. One specimen preserved in the American Museum of Natural History has a wing spread of 165 cm 5 ft 5 in but some unmeasured bats probably reach 183 cm 6 ft.

Largest Britain

The largest bat found in Britain is the very rare Large mouse-eared bat (*Myotis myotis*). Mature specimens have a wing span of 355–450 mm 13.97–17.71 in and weigh up to 45 g 1.58 oz (females).

Smallest World

For details of Kitti's hog-nosed bat see p. 28.

Smallest Britain

The smallest native British bat is the Pipistrelle (*Pipistrellus pipistrellus*). Mature specimens have a wing span of 190–250 mm 7.48–9.84 in and weigh between 3 and 8 g 0.1–0.28 oz.

Rarest World

At least three species of bat are known only from the holotype specimen. They are: the Small-toothed fruit bat (*Neopteryx frosti*) from Tamalanti, West Celebes (1938/39); *Paracoelops megalotis* from Vinh, Vietnam (1945); and *Latidens salimalii* from the High Wavy Mountains, southern India (1948).

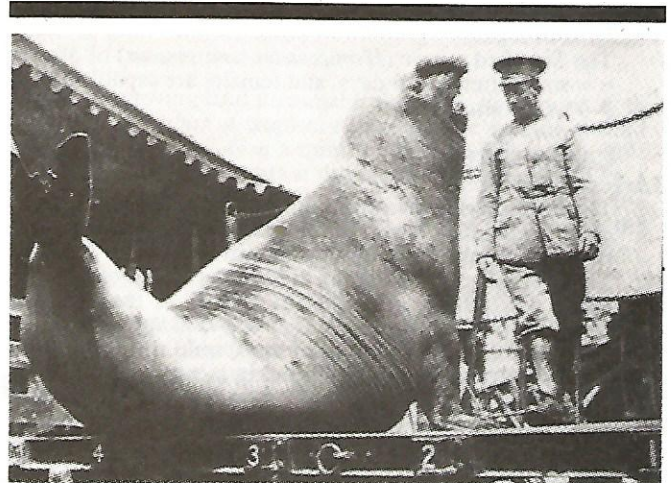
Rarest Britain

The rarest native British bat is Bechstein's bat (*Myotis bechsteini*), which is confined to Southern England. There have been about thirty records to date (including 16 from Dorset). In January 1965 fifteen specimens of the Grey long-eared bat (*Plecotus austriacus*) were discovered in the roof of the Nature Conservancy's Research Station at Furzebrook, Dorset. Up to then this species, which is found all over Europe, had only been recorded once in Britain (Hampshire, 1875). In November 1976 another specimen was found in Sussex.

Fastest

Because of the great practical difficulties few data on bat speeds have been published. The greatest velocity attributed to a bat is 32 mph 51 km/h in the case of a Brazilian free-tailed bat (*Tadarida brasiliensis*), but this may have been wind-assisted. In one American experiment using an artificial mine tunnel and 17

The famous southern elephant seal 'Goliath', of the Ringling Bros. and Barnum and Bailey Circus. This bull weighed over 6000 lb 2.7 metric tonnes.





The relative sizes of felines. The Indian Tiger which may reach over 850 lb 385 kg contrasts with the Wild cat found in the Scottish Highlands (left) and the smallest feline, the Rusty Spotted cat of only 3 lb 1.35 kg (see p. 30).

different kinds of bat, only four of them managed to exceed 13 mph 20.8 km/h in level flight.

Longest lived

The greatest age reliably reported for a bat is 31 years 5 months for an Indian flying fox (*Pteropus giganteus*) which died at London Zoo on 11 Jan 1979.

Highest detectable pitch

Because of their ultrasonic echolocation bats have the most acute hearing of any terrestrial animal. Vampire bats (*Desmodontidae*) and fruit bats (*Pteropodidae*) can hear frequencies as high as 150 kHz (cf. 20 kHz for the adult human limit but 153 kHz for the Bottle-nosed dolphin (*Tursiops truncatus*)).

PRIMATES

Largest

The largest living primate is the Mountain gorilla (*Gorilla gorilla beringei*) of the volcanic mountain ranges of W Rwanda, SW Uganda and E Zaire. The average adult male stands 5 ft 9 in 1.75 m tall (including crest) and weighs about 430 lb 195 kg. The greatest height (top of crest to heel) recorded for a gorilla is 195 cm 6 ft 4¾ in for a male collected by a German expedition at Alimbongo, N Kivu on 16 May 1938.

The heaviest gorilla ever kept in captivity was a male of the mountain race named 'N'gagi', who died in San Diego Zoo, California, USA on 12 January 1944 aged 18 years. He scaled 683 lb 310 kg at his heaviest in 1943, and weighed 636 lb 288 kg at the time of his death. He was 5 ft 7¾ in 1.72 m tall and boasted a record chest measurement of 78 in 198 cm. The heaviest gorilla living in captivity today is a Western lowland (*Gorilla g. gorilla*) male called 'Zaak', who was received at Kobe Oji Zoo, Japan in December 1962. He tipped the scales at 628 lb 285 kg in June 1976, but has not been weighed since.

Smallest

The smallest known primate is the rare Pen-tailed shrew (*Ptilocercus lowii*) of Malaysia, Sumatra and Borneo. Adult specimens have a total length of 230–330 mm 9–13 in (head and body 100–140 mm 3.93–5.51 in, tail 130–190 mm 5.1–7.5 in) and weigh 35–50 g 1.23–1.76 oz. The Pygmy marmoset (*Cebuella pygmae*) of the Upper Amazon Basin and the Lesser mouse-lemur (*Micro-*

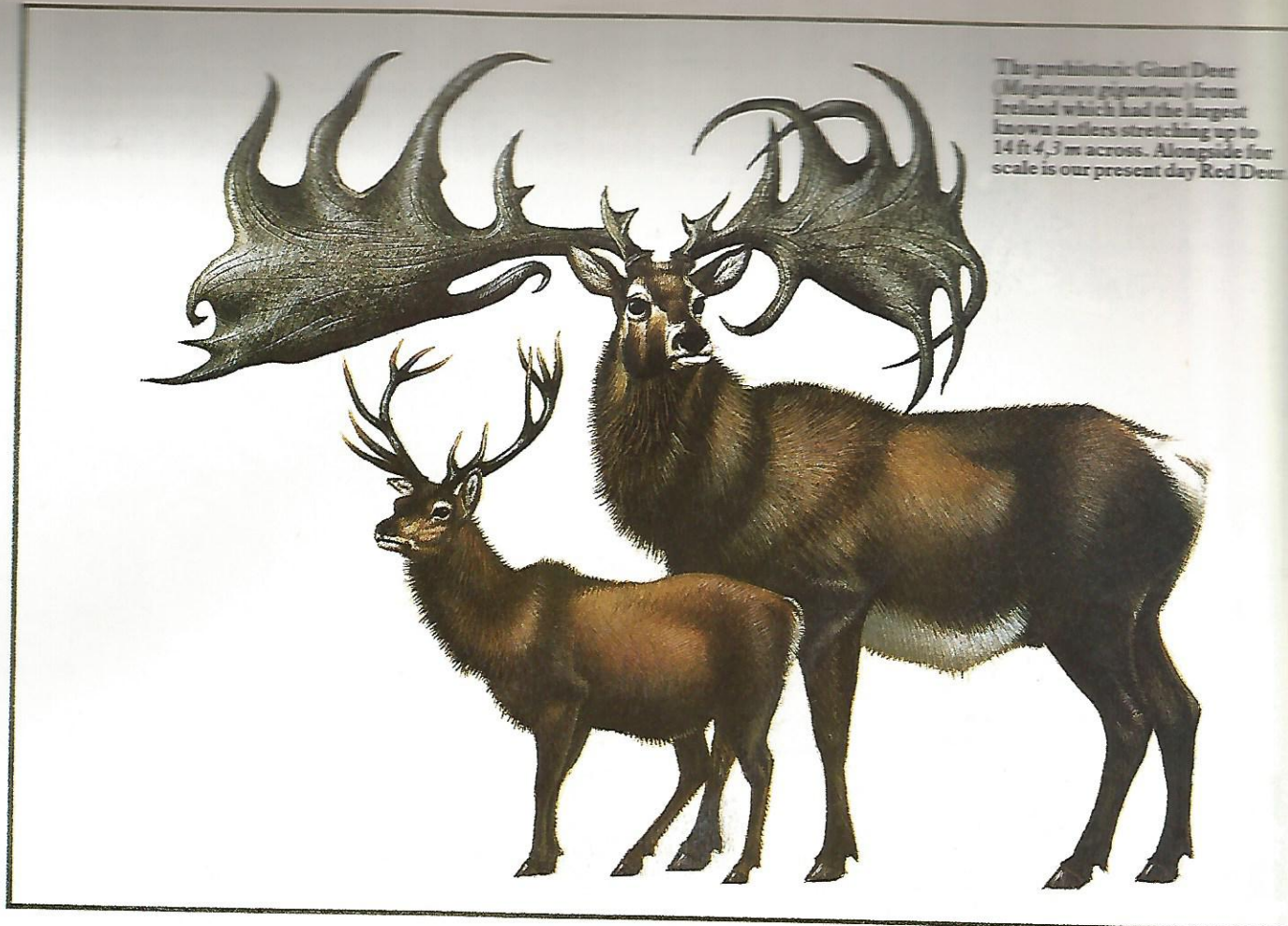
cebus murinus) of Madagascar are also of comparable length but heavier, adults weighing 50–75 g 1.76–2.64 oz and 45–80 g 1.58–2.82 oz respectively.

Rarest

The rarest primate is the Hairy-eared dwarf lemur (*Allocebus trichotis*) of Madagascar which, until fairly recently, was known

Fruit-bats (*Pteropodidae*) which respond to frequencies seven and a half times higher than the human hearing limit. (Heather Angel)





The prehistoric Giant Deer (*Megaloceros giganteus*) from Ireland which had the largest known antlers stretching up to 14 ft 4.5 m across. Alongside for scale is our present day Red Deer.

only from the holotype specimen and three skins. In 1966, however, a live example was found on the east coast near Mananara.

Longest lived

The greatest irrefutable age reported for a non-human primate is c. 59 years in the case of a male Orang-utan (*Pongo pygmaeus*) named 'Guas', who died in Philadelphia Zoological Garden, Pennsylvania, USA on 9 Feb 1977. When he was received on 1 May 1931 he was at least 13 years of age. The world's oldest living primate is a male Chimpanzee (*Pan troglodytes*) named 'Jimmy' at Seneca Zoo, Rochester, N.Y., USA, who was still alive in February 1982 aged 51 years 8 months.

Strength

In 1924 'Boma', a 165 lb 74.80 kg male chimpanzee at Bronx Zoo, New York, NY, USA recorded a right-handed pull (feet braced) of 847 lb 384 kg on a dynamometer (cf. 210 lb 95 kg for a man of the same weight). On another occasion an adult female chimpanzee named 'Suzette' (estimated weight 135 lb 61 kg) at the same zoo registered a right-handed pull of 1260 lb 572 kg while in a rage. A record from the USA of a 100 lb 45 kg chimpanzee achieving a two-handed dead lift of 600 lb 272 kg with ease suggests that a male gorilla could with training raise 1800 lb 816 kg!

MONKEYS

Largest

The only species of monkey reliably credited with weights of more than 100 lb 45 kg is the Mandrill (*Mandrillus sphinx*) of equatorial West Africa. The greatest reliable weight recorded is 119 lb 54 kg for a male but an unconfirmed weight of 130 lb 59 kg has been reported. (Adult females are about half the size of males).

Smallest

The smallest known monkey is the Pygmy marmoset (*Cebuella pygmaea*) of the Upper Amazon Basin (see Primate Smallest).

Oldest

The greatest reliable age recorded for a monkey is 46 years months for a White-throated capuchin (*Cebus capucinus*) who died in Evansville Zoo, Indiana, USA on 12 Apr 1976.

RODENTS

Largest

The world's largest rodent is the Capybara (*Hydrochoerus hydrochaeris*), also called the Carpincho or Water hog, which is found in tropical South America. Mature specimens have a head and body length of 3¼-4½ ft 0.99-1.4 m and weigh up to 174 lb 79 kg. Britain's largest rodent is now the Coypu (*Myocastor coypus*), also known as the Nutria, which was introduced from Argentina by East Anglian fur-breeders in 1929. Three years later, the first escapes were recorded and by 1960 at least 200,000 coypus were living in East Anglia. About 80 per cent were killed by the winter of 1963 and a government campaign of extermination has reduced the population to c. 8000 animals. Adult males measure 30-36 in 76-91 cm in length (including short tail) and weigh up to 28 lb 13 kg in the wild state (40 lb 18 kg in captivity).

Smallest

The smallest known rodent is the Northern Pygmy mouse (*Baiomys taylori*) of central Mexico and southern Arizona and Texas, USA, which measures up to 109 mm 4.3 in in total length and weighs 7-8 g 0.24-0.28 oz. Britain's smallest rodent is the Old World harvest mouse (*Micromys minutus*), which measures up to 135 mm 5.3 in in total length and weighs 7-10 g 0.24-0.35 oz.

Rarest

The rarest rodent in the world is believed to be the James Island rice rat (*Oryzomys swarthi*), also called Swarth's rice rat. Four specimens were collected on this island in the Galapagos group in 1906, and it was not heard of again until January 1966 when a recent skull was found.

Longest lived

The greatest reliable age reported for a rodent is 27 years 3 months for a Sumatran crested porcupine (*Hystrix brachyura*) which died in National Zoological Park, Washington DC, USA, on 12 Jan 1965.

Fastest breeder

The female Meadow vole (*Microtus agrestis*) found in Britain, can reproduce for the age of 25 days and have up to 17 litters of 6–8 young in a year.

INSECTIVORES

Largest

The largest insectivore is the Moon rat (*Echinosorex gymnaeus*), also known as Raffles' gymnure, which is found in Burma, Thailand, Malaysia, Sumatra and Borneo. Mature specimens have a head and body length of 265–445 mm 10.43–17.52 in, a tail measuring 200–210 mm 7.87–8.26 in and weigh up to 1400 g 3.08 lb. Although the much larger Anteaters (family Tachyglossidae and Myrmecophagidae) feed on termites and other soft-bodied insects they are not insectivores, but belong to the orders Monotremata and Edentata, ('without teeth').

Smallest

The smallest insectivore is Savi's white-toothed pygmy shrew (*Suncus etruscus*), also called the Etruscan shrew, which is found along the coast of the northern Mediterranean and southwards to Cape Province, South Africa. Mature specimens have a head and body length of 36–52 mm 1.32–2.04 in, a tail length of 24–29 mm 0.94–1.14 in and weigh between 1.5 and 2.5 g 0.052 and 0.09 oz.

Longest lived

The greatest reliable age recorded for an insectivore is 15+ years for a Lesser hedgehog-tenrec (*Echinops telfairi*), which was born in Amsterdam Zoo, Netherlands in 1966 and was later sent to Jersey Zoo. It was still alive in March 1982.

ANTELOPES

Largest

The largest of all antelopes is the rare Giant eland (*Tragelaphus derbianus*), of West and Central Africa, which may surpass 2000 lb 907 kg. The Common eland (*T. oryx*) of East and South Africa has the same shoulder height of up to 5 ft 10 in 1.78 m but is not quite so massive, although there is one record of a 5 ft 5 in 1.65 m bull shot in Nyasaland (now Malawi) in c. 1937 which weighed 2078 lb 943 kg.

Smallest

The smallest known antelope is the Royal antelope (*Neotragus pygmaeus*) of West Africa. Mature specimens measure 10–12 in 25–31 cm at the shoulder and weigh only 7–8 lb 3–3.6 kg which is the size of a large Brown hare (*Lepus europaeus*). Salt's dik-dik (*Madoqua saltina*) of NE Ethiopia and Somalia weighs only 5–6 lb 2.2–2.7 kg when adult, but this species stands about 14 in 35.5 cm at the withers.

Rarest

The rarest antelope is the Arabian oryx (*Oryx leucoryx*) (see Mammals Rarest).

Oldest

The greatest reliable age recorded for an antelope is 25 years 4 months for an Addax (*Addax nasomaculatus*) which died in Brookfield Zoo, Chicago, Illinois, USA on 15 Oct 1960.

DEER

Largest

The largest deer is the Alaskan moose (*Alces alces gigas*). A bull standing 7 ft 8 in 2.3 m at the withers and weighing an estimated 1800 lb 816 kg was shot on the Yukon River in the Yukon Territory, Canada in September 1897. Unconfirmed measurements up to 8½ ft 2.59 m at the withers and estimated weights up to 2600 lb 1180 kg have been claimed. The record antler span is 7½ in 199 cm.

Smallest

The smallest true deer (family Cervidae) is the Northern pudu (*Pudu mephistophiles*) of Ecuador and Colombia. Mature speci-

mens measure 13–14 in 33–35 cm at the shoulder and weigh 16–18 lb 7.2–8.1 kg. The smallest ruminant is the Lesser Malay chevrotain (*Tragulus javanicus*) of SE Asia, Sumatra and Borneo. Adult specimens measure 8–10 in 20–25 cm at the shoulder and weigh 6–7 lb 2.7–3.2 kg.

Rarest

The rarest deer in the world is Fea's muntjac (*Muntiacus feae*), which until recently, was known only from two specimens collected on the borders of S Burma and W Thailand. In December 1977 a female was received at Bangkok Zoo.

Oldest

The greatest reliable age recorded for a deer is 26 years 8 months for a Red deer (*Cervus elaphus scoticus*) which died in Milwaukee Zoo, Wisconsin, USA on 28 June 1954.

MARSUPIALS

Largest

The largest of all marsupials is the Red kangaroo (*Macropus rufus*) of southern and eastern Australia. Adult males or 'boomers' stand up to 7 feet 2,13 m tall, weigh up to 175 lb 79 kg and measure up to 8 ft 11 in 2,71 m in a straight line from the nose to the tip of the extended tail.

Smallest

The smallest known marsupial is the very rare Ingram's planigale (*Planigale ingrami*), a flat-skulled mouse found only in north west Australia. Adult males have a head and body length of 45 mm 1.77 in, a tail length of 50 mm 2 in and weigh about 4 g 0.14 oz.

Rarest

The rarest marsupial is probably the Thylacine (*Thylacinus cynocephalus*), also known as the 'Tasmanian wolf', the largest of the carnivorous marsupials, which reportedly became extinct some time in the late-1930s (the last captive specimen died in Beaumaris Zoo, Hobart, Tasmania on 7 Sept 1936). In 1961, however, a young male was accidentally killed by 2 fishermen at Sandy Cape, western Tasmania, when trying to eat their bait. The carcass was stolen but positive identification was made from hair and blood samples. In December 1966 the traces of a thylacine lair in which a female and pups had been living were found at Whyte River, near Mawbanna. Since then there have been a number of sightings, but most of these referred to greyhounds.

Longest lived

The greatest reliable age recorded for a marsupial is 26 years 0 months 22 days for a Common Wombat (*Vombatus ursinus*) which died in London Zoo on 20 Apr 1906.

Highest and longest jumps

The greatest measured height cleared by a hunted kangaroo is 10 ft 6 in 3,20 m over a pile of timber. During the course of a chase in January 1951 a female Red kangaroo (*Macropus rufus*) made a series of bounds which included one of 42 ft 12,80 m. There is also an unconfirmed report of a Great grey kangaroo (*M. kangaroo*) jumping nearly 13,5 m 44 ft 8½ in on the flat.

TUSKS

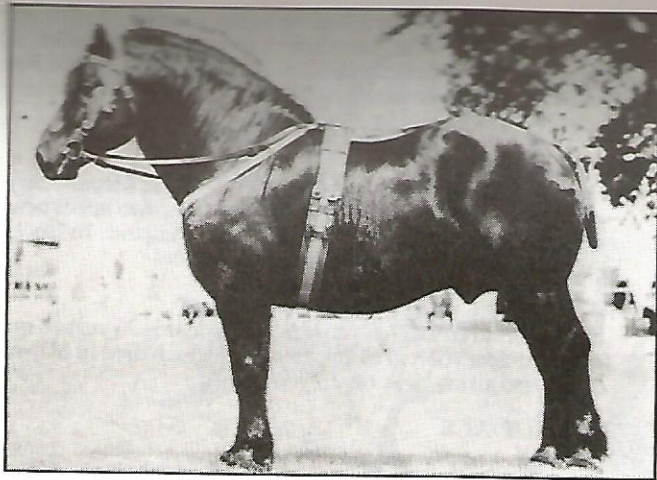
Longest

The longest recorded elephant tusks (excluding prehistoric examples) are a pair from Zaïre preserved in the National Collection of Heads and Horns kept by the New York Zoological Society in Bronx Park, New York City, NY, USA. The right tusk measures 11 ft 5½ in 3,49 m along the outside curve and the left 11 ft 3,35 m. Their combined weight is 293 lb 133 kg. A single tusk of 11 ft 6 in 3,5 m has been reported, but further details are lacking.

Heaviest

The heaviest recorded tusks are a pair in the British Museum (Natural History) which were collected from an aged bull shot by an Arab with a muzzle-loading gun at the foot of Mt. Kilimanjaro, Kenya in 1897. They weigh 240 lb 109 kg (length 10 ft 2½ in 3,11 m) and 225 lb 102 kg (length 10 ft 5½ in 3,18 m) respectively, giving a combined weight of 465 lb 211 kg.

The greatest weight ever recorded for an elephant tusk is 117 kg 258 lb for a specimen collected in Benin, West Africa and exhibited at the Paris Exposition in 1900.



'Pinchbeck Union Crest', the heaviest horse in Britain, who weighs 1.17 tons/tonnes. (Sally Anne Thompson)

HORNS

Longest

The longest recorded animal horn was one measuring $81\frac{1}{4}$ in 206 cm on the outside curve, with a circumference of $18\frac{1}{4}$ in 46 cm, found on a specimen of domestic Ankole cattle (*Bos taurus*) near Lake Ngami, Botswana. The largest head (horns measured from tip to tip along the outside curve across the forehead) is one of 13 ft 11 in 4.24 m for a specimen of wild buffalo (*Bubalus bubalus*) shot in India in 1955. The maximum recorded for a Texas Longhorn steer is 9 ft 9 in 2.97 m from tip to tip.

Longest Rhinoceros

The longest recorded anterior horn for a rhinoceros is one of $62\frac{1}{4}$ in 158 cm found on a female southern race White rhinoceros (*Ceratotherium simum simum*) shot in South Africa in c. 1848. The

interior horn measured $22\frac{1}{4}$ in 57 cm. There is also an unconfirmed record of an anterior horn measuring 81 in 206 cm.

HORSES AND PONIES

The world's horse population is estimated to be 75,000,000.

Largest

The heaviest horse ever recorded was a 19.2-hand (6 ft 6 in 1.98 m) pure-bred Belgian stallion named 'Brooklyn Supreme' (foaled 12 Apr 1928) owned by Ralph Fogleman of Callender, Iowa, USA which weighed 3200 lb 1.42 tons 1.44 tonnes shortly before his death on 6 Sept 1948 aged 20.

In April 1973 the Belgian mare 'Wilma du Bos' (foaled 15 Jun 1966), owned by Mrs Virgie Arden of Reno, Nevada, USA was reported to weigh slightly in excess of 3200 lb 1451 kg when foal and being shipped from Antwerp. The normal weight of the 18.2-hand 1.88 m mare is about 2400 lb 1088 kg. The British weight record is held by the 17.2-hand (5 ft 10 in 1.78 m) Shire stallion 'Honest Tom 5123' (foaled in 1884), owned by James Forshaw of Littleport, Cambridgeshire, which scaled 2912 lb 1325 kg in 1891. This poundage may have been exceeded by another huge Shire stallion named 'Great Britain 978', bred by Henry Bulttaft of Ely, Cambridgeshire in 1876, but no weight details are available. In 1888 this horse was sold to Phineas B. Barnum, the American showman, for exhibition purposes.

The heaviest horse living in Britain today is the 17.2 hands (5 ft 10 in 1.78 m) champion Percheron stallion 'Pinchbeck Union Crest' (foaled 27 Jan 1964), owned by Mr. George Sneath of Pinchbeck, Spalding, Lincs., which weighs $23\frac{1}{2}$ cwt 1194 kg.

Tallest

The tallest horse documented was the Percheron-Shire cross 'Firpon' (foaled 1959), owned by Julio Falabella which stood 21.1 hands (7 ft 1 in 2.16 m) and weighed 2976 lb 1350 kg. He died on the Recco de Roca Ranch near Buenos Aires, Argentina on 14 Mar 1972. A height of 21.1 hands was also claimed for the Clydesdale gelding 'Big Jim' (foaled 1950) bred by Lyall M. Anderson of West Broomley, Montrose, Scotland. He died in 1972.

WORLD'S TALLEST DOG



left: The tallest Great Dane ever recorded, 'Shamgret Danzas', who stands $40\frac{1}{2}$ in 102.9 cm. right: His front left paw print (actual size) would provide an area amply large enough for a Yorkshire Terrier to stand on. (David F. Hoy)

Louis, Missouri in 1957. A chain for 21.2 hands (7 ft 2 in 2.18 m) was made in 1908 for a horse named 'Morocco' weighing 2835 lb 1286 kg in Allentown, Pennsylvania, USA. The tallest horse living in Britain today is the Shire stallion 'Ryton Regent' (foaled 1971), owned by Mr. Robert Brickell of Witney, Oxfordshire, which stands 19.1½ hands (6 ft 5½ in 1.97 m) and weighs over 20 cwt (2240 lb 1016 kg).

Smallest

The smallest breed of horse (*sic*) is the Falabella of Argentina which was developed over a period of 45 years by crossing and recrossing a small group of undersized English Thoroughbreds with Shetland ponies. Adult specimens stand 15–30 in 38–74 cm at the shoulder and weigh 40–80 lb 18–36 kg. Foals of 3 hands (12 in 30.4 cm) have been twice recorded by Norman J. Mitchell of Glenorie, NSW, Australia in the cases of 'Tung Dynasty' (8 Feb 1978) and 'Quicksilver' (1975).

Oldest

The greatest reliable age recorded for a horse is 62 years in the case of 'Old Billy' (foaled 1760), believed to be a cross between a Cleveland and Eastern blood, who was bred by Mr Edward Robinson of Wild Grave Farm in Woolston, Lancashire. In 1762 or 1763 he was sold to the Mersey and Irwell Navigation Company and remained with them in a working capacity (*i.e.* marshalling and towing barges) until 1819 when he was retired to a farm at Latchford, near Warrington, where he died on 27 Nov 1822. The skull of this horse is preserved in the Manchester Museum, and his stuffed head is now on display in the Bedford Museum. The greatest reliable age recorded for a pony is 54 years for a stallion owned by a farmer in Central France which was still alive in 1919. The greatest age recorded for a thoroughbred racehorse is 42 years in the case of the bay gelding 'Tango Duke' (foaled 1935), owned by Mrs Carmen J. Koper of Barongarook, Victoria, Australia. The horse died on 25 Jan 1978.

Strongest draught

The greatest load ever hauled by a pair of draught-horses was 48 short tons 43.5 tonnes (= 50 pine logs or 36,055 board-feet of

timber) on a special sledge litter pulled across snow for a distance of 275 yd 251 m at the Nester Estate, Ewen, Ontanagon County, Michigan, USA on 26 Feb 1893. The two horses, both Clydesdales, had a combined weight of 3500 lb 1587 kg. On 4 Sept 1924 a pair of Shire geldings owned by Liverpool Corporation registered a much more impressive *maximum* pull equivalent to a starting load of 50 tons 51 tonnes on a dynamometer at the British Empire Exhibition at Wembley, London.

DOGS UK dog population 5,542,000 (1982 estimate) compared with 41,000,000 for the USA).

Largest

The heaviest breed of domestic dog (*Canis familiaris*) is the St Bernard. The heaviest recorded example is 'Benedictine Schwarzwald Hof', owned by Thomas and Ann Irwin of Grand Rapids, Michigan, USA. He was whelped on 17 Dec 1970 and weighed 21 st 11 lb 138.34 kg in May 1978, (height at shoulder 39 in 99 cm). He has not been weighed since. The heaviest dog ever recorded in Britain is 'Heidan Dark Blue' (whelped 23 Apr 1978) also called 'Jason', a St Bernard owned by Nicol Plummer of Skeffington, Leics. In September 1981 he reached a peak 21 st 4¾ lb 135.5 kg (shoulder height 34 in 86.3 cm) but by March 1982 he was down to 18 st 12½ lb 120 kg after being put on a diet.

Tallest

The tallest breeds of dog are the Great Dane and the Irish wolfhound, both of which can exceed 39 in 99 cm at the shoulder. In the case of the Great Dane the extreme recorded example is 'Shamgret Danzas' (whelped in 1975), owned by Mrs G. Comley of Milton Keynes, Bucks. He stands 40½ in 102.9 cm and weighs 16 st 101.6 kg. The Irish Wolfhound 'Broadbridge Michael' (whelped in 1920), owned by Mrs Mary Beynon of Sutton-at-Hone, Kent, stood 39½ in 100.3 cm at the age of 2 years.

Smallest

The world's smallest breeds of dog are the Yorkshire terrier, the Chihuahua and the Toy poodle, *miniature* versions of which have been known to weigh less than 16 oz 453 g when adult. In April 1971 a weight of 10 oz 283 g was reliably reported for a fully-grown Yorkshire terrier called 'Sylvia' (shoulder height 3½ in 89 mm) owned by Mrs Connie Hutchins of Walthamstow, Greater London.

Oldest

Authentic records of dogs living over 20 years are rare, but even 34 years has been accepted by one authority. The greatest reliable age recorded for a dog is 29 years 5 months for a Queensland 'heeler' named 'Bluey', owned by Mr Les Hall of Rochester, Victoria, Australia. The dog was obtained as a puppy in 1910 and worked among cattle and sheep for nearly 20 years. He was put to sleep on 14 Nov 1939. The British record is 27 years 313 days for a Welsh collie named 'Taffy' owned by Mrs Evelyn Brown of Forge Farm, West Bromwich, W. Midlands. He was whelped on 2 Apr 1952 and was put to sleep on 9 Feb 1980.

Strength and endurance

The greatest load ever shifted by a dog was 6400½ lb 2905 kg of railroad steel pulled by a 176 lb 80 kg St Bernard named 'Ryettes Brandy Bear' at Bothell, Washington, USA on 21 July 1978. The 4-year-old dog, owned by Douglas Alexander of Monroe, Washington, pulled the weight on a four-wheeled carrier across a cement surface for a distance of 15 ft 4.57 m in less than 90 sec. The strongest dog in the world in terms of most proportionate weight hauled is 'Barbara-Allen's Dark Hans', a 97 lb 44 kg Newfoundland, who pulled 5045½ lb 2289 kg (= 52 lb 23.5 kg per lb 0.45 kg body weight) across a cement surface at Bothell on 20 July 1979. The dog, owned by Miss Terri Dickinson of Kenmore, Washington, was only 12 months old when he made the attempt. The record time for the annual 1100 mile 1770 km dog sled race from Anchorage to Nome, Alaska is 12 days 7 hr 45 min by Rick Swenson's team of dogs in the 1981 race.

Rarest

The world's rarest breed of dog is the Tahltan bear dog, which was formerly used by the Tahltan Indians of western Canada for hunting big game. Only five known examples of this hound still



survive, and four of these are spayed bitches, which means the Tahltan has now passed the point of no return unless a breeding pair can be found. The solitary dog, 'Iskut' (whelped 14 Mar 1967), is owned by Mrs Winnie Acheson of Atlin, British Columbia, where three of the bitches also live.

Guide dog

The longest period of *active service* reported for a guide dog is 13 years 2 months in the case of a Labrador-retriever bitch named 'Polly' (whelped 10 Oct 1956), owned by Miss Rose Resnick of San Rafael, California, USA. The dog was put to sleep on 15 Dec 1971.

Largest litter

The largest recorded litter of puppies is one of 23 thrown on 19 June 1944 by 'Lena', a foxhound bitch owned by Commander W. N. Ely of Ambler, Pennsylvania, USA. On 6-7 Feb 1975 'Careless Ann', a St Bernard, owned by Robert and Alice Rodden of Lebanon, Missouri, USA also produced a litter of 23, 14 of which survived. The British record is held by 'Settrina Baroness Medina', an Irish Red Setter owned by Mgr M. J. Buckley, Director of the Wood Hall Centre, Wetherby, West Yorkshire. The bitch gave birth to 22 puppies, 15 of which survived, on 10 Jan 1974. All 18 puppies born on 16 March 1981 to 'Emma', an Irish setter owned by Mr T. Blackmore of London, survived.

Most prolific

The greatest sire of all time was the champion greyhound 'Low Pressure', nicknamed 'Timmy', whelped in September 1957 and owned by Mrs Bruna Amhurst of Regent's Park, London. From December 1961 until his death on 27 Nov 1969 he fathered 2414 registered puppies, with at least 600 others unregistered.

Most valuable

In June 1972 Mrs Judith Thurlow of Great Ashfield, Suffolk turned down an offer of £14,000 for her racing greyhound 'Super Rory' (b. October 1970). Show dogs have also fetched extremely high prices, and in July 1976 Mrs Eiselle Banks of Rayleigh, Essex turned down an American offer of £10,000 for her international champion Lowchen 'Cluneen Adam Adamant' (b. 13 Aug 1969). On 27 June 1972 Mr August Belmont of Easton, Maryland, USA paid \$22,000 (then £8,500) for his labrador retriever puppy 'Wanapum Lucky Yo Yo'; bred by Eddie Dewitt of Redmond, Washington, USA. This is the highest price *actually paid* for a dog.

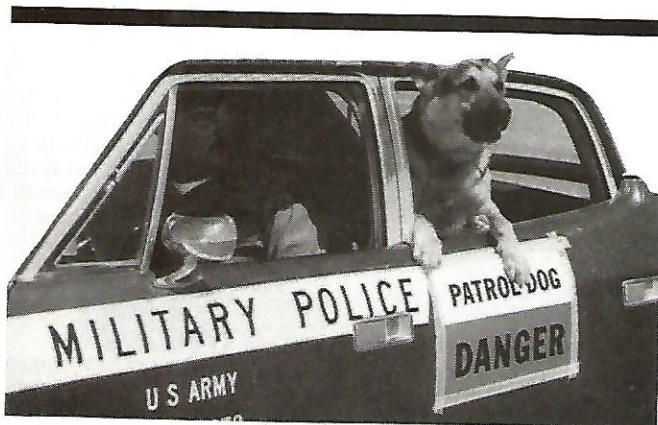
'Top dog'

The greatest altitude attained by a mammal is 1050 miles 1690 km by the Samoyed husky bitch fired as a passenger in Sputnik II on 3 Nov 1957. The dog was variously named 'Kudryavka' (feminine form of 'Curly') 'Limonchik' (diminutive of lemon), 'Malyshka', 'Zhuchka' or by the Russian breed name for husky, 'Laika'.

Highest and longest jump

The canine 'high jump' record for a leap and a scramble over a

'General', the US army drug sniffer dog who apprehended 220 narcotics offenders. (US Army Photograph)



smooth wooden wall (without any ribs or other aids) is held by German shepherd dog named 'Max of Pangola', who scaled a 11ft 5½in 3.43m wall, at Chikurubi prison's dog training school near Salisbury, Zimbabwe on 18 Mar 1980. His trainer was Chief Prison Officer Alec Mann. 'Young Sabre', another German shepherd dog, handled by Cpl David Smith scaled a ribbed wall with regulation shallow slats to a height of 11ft 8in 3.55m at RAF Newton, Nottinghamshire on 17 July 1981. The longest recorded canine long jump was one of 30ft 9¼m by greyhound named 'Bang' made in jumping a gate in coursing hare at Brecon Lodge, Gloucestershire in 1849.

Ratting

The greatest ratter of all time was Mr James Searle's bull terrier bitch 'Jenny Lind', who killed 500 rats in 1 hr 30 min at 'The Beehive', Old Crosshall Street, Liverpool on 12 July 1853. Another bull terrier named 'Jacko' owned by Mr Jemmy Shaw was credited with killing 1000 rats in 1 hr 40 min, but the feat was performed over a period of ten weeks in batches of 100 at a time. The last 100 were accounted for in 5 min 28 sec in London on 1 May 1862.

Tracking

The greatest tracking feat on record was performed by a Doberman Pinscher named 'Sauer', trained by Detective-Sergeant Herbert Kruger. In 1925 he tracked a stock-thief 100 miles 160 km across the Great Karroo, South Africa by scent alone. In 1923 a collie dog named 'Bobbie', lost by his owners while they were on holiday in Wolcott, Indiana, USA, turned up at the family home in Silverton, Oregon 6 months later, after covering a distance of some 2000 miles 3200 km. The dog, later identified by householders who had looked after him along the route, had apparently travelled back through the states of Illinois, Iowa, Nebraska and Colorado, before crossing the Rocky Mountains in the depths of winter and then continuing through Wyoming and Idaho.

Top show dog

The record number of 'Best in Show' awards won by any dog in all breed shows is 127 compiled by the Pekinese International Champion Chik T'Sun of Caversham, owned by Mr and Mrs Charles C. Venable of Marietta, Georgia, in North America from January 1957 to February 1960.

Top trainer

The most successful dog trainer in the world—and the fastest—is Mrs Barbara Woodhouse of Rickmansworth, Hertfordshire, who has trained 17,136 dogs to obey the basic commands during the period 1951 to 25 Mar 1982. Her record for a single day is 80 dogs (Denver, Colorado, USA June 1973).

Police Dogs

The world's top police dog is 'Trep' of Dade County Crime Force, Florida, USA with \$63 million (then £36 million) worth of narcotics sniffed out. Demonstrating at a school with 10 hidden packets, Trep once found 11. 'Sergeant Blitz', a drug-sniffing police dog in Savannah, Georgia, USA was the subject of a \$10,000 (£5,250) 'contract' in January 1977. 'General', a US Army dog 'arrested' 220 narcotics offenders in the period April 1974-March 1976.

Greatest dog funeral

The greatest dog funeral on record was for the mongrel dog 'Lazarus' belonging to the eccentric Emperor Norton I of the United States, Protector of Mexico, held in San Francisco, California in 1862 which was attended by an estimated 10,000 people.

CATS (UK cat population 4,897,000 (1982 estimate) compared with 23,000,000 for the USA)

Heaviest

The heaviest domestic cat (*Felis catus*) on record was a long-haired part Persian named 'Tiger' owned by Mrs Phyllis Dacey of Billericay, Essex. During the two-year period ending September 1979 he scaled a constant 42-43lb 19.05-19.50 kg (neck 12½ in 31.75 cm, waist 33 in 83.8 cm, length 37 in 94 cm), but after receiving treatment for a hormone imbalance he started to lose weight rapidly. When he was put to sleep on 27 Aug 1980, as a result of kidney trouble, he was down to 18lb 8.16 kg.

Smallest

Because of the reproduction problems involved, there is no recognised smallest breed of cat. Adult weights of under 3 lb 1.36 kg, however, have been reliably reported in some cases of feline dwarfism (average weight 9–11 lb 4.08–4.98 kg).

Oldest

Cats are generally longer-lived than dogs. Information on this subject is often obscured by two or more cats bearing the same nickname in succession. The oldest cat ever recorded was probably the tabby 'Puss', owned by Mrs T. Holway of Clayhidon, Devon who celebrated his 36th birthday on 28 Nov 1939 and died the next day. A more recent and better-documented case was that of the female tabby 'Ma', owned by Mrs Alice St George Moore of Drewsteignton, Devon. This cat was put to sleep on 5 Nov 1957 aged 34.

Largest kindle

The largest litter ever recorded was one of 19 kittens (4 stillborn) delivered by Caesarean section to 'Tarawood Antigone', a 4-year-old brown Burmese, on 7 Aug 1970. Her owner, Mrs Valerie Gane of Church Westcote, Kingham, Oxfordshire, said the result was a mis-mating with a half-Siamese. Of the 15 survivors, 14 were males and one female.

The largest live litter (all of which survived) was one of 14 kittens born in December 1974 to a Persian cat named 'Bluebell', owned by Mrs Elenore Dawson of Wellington, Cape Province, South Africa.

Most prolific

A cat named 'Dusty', aged 17, living in Bonham, Texas, USA, gave birth to her 420th kitten on 12 June 1952. A 21-year-old cat 'Tippy' living in Kingston-upon-Hull, Humberside gave birth to her 343rd kitten in June 1933.

Richest and most valuable

Dr William Grier of San Diego, California, USA died in June 1963 leaving his entire estate of \$415,000 (then £148,000) to his two 15-year-old cats 'Hellcat' and 'Brownie'. When the cats died in 1965 the money went to the George Washington University in Washington, DC. In 1967 Miss Elspeth Sellar of Grafham, Surrey turned down an offer of 2000 guineas (£2100) from an American breeder for her champion copper-eyed white Persian tom 'Coylum Marcus' (b. 28 Mar 1965) who died on 14 Apr 1978.

Best climber

On 28 Feb 1980 a female cat climbed 70 ft 21.3 m up the sheer

LARGEST PET LITTERS

Animal/Breed	Date	No.	Owner
CAT <i>Burmese/Siamese</i>	7.8.1970	15*	Mrs Valerie Gane, Church Westcote, Kingham, Oxfordshire.
DOG <i>Foxhound</i>	19.6.1944	23	Cdr W. N. Ely, Ambler, Pennsylvania, USA.
<i>St Bernard</i>	6/7.2.1975	23	R. and A. Rodden, Lebanon, Missouri, USA.
RABBIT <i>New Zealand White</i>	1978	24	Joseph Filek, Sydney, Cape Breton, Nova Scotia, Canada.
GUINEA PIG	1972	12	Laboratory Specimen.
HAMSTER <i>Golden Hamster</i>	28.2.1974	26†	L. and S. Miller, Baton Rouge, Louisiana, USA
MOUSE <i>House Mouse</i>	Mar 1961	32	Laboratory Specimen (USA).
GERBIL	May 1979	11	Steve Austin, Addington, Surrey.
	4.5.1980	11	Heather James, High Wycombe, Bucks.

* 4 still born † 18 killed by mother

CAGED PET LONGEVITY

The greatest recorded ages for commonly kept pets

Animal/Species	Name, Owner etc.	Years	Months
RABBIT <i>European</i>	fl. August 1977	18*	—
GUINEA PIG	Snowball Died: 14 Feb 1979 (owner, M. A. Wall) Bingham, Notts.	14	10½
GERBIL	Sahara fl. 1981, (owner, Aaron Milstone) Lathrap Village, Mich, USA.	8+	
MOUSE	Dixie Died: 25 April 1981 (owner, A. Newton) Sheffield, S Yorkshire.	6	6
RAT	Died: c. 1924 Philadelphia, Pennsylvania, USA.	5	8

* 18 years also reported for a doe still living in 1947.

Note: A report of 10 years 2 months for a hamster has been published but details are lacking.

pebble-dash outside wall of a five-storey block of flats in Bradford, Yorkshire and took refuge in a roof space. It had been frightened by a dog.

Mousing Champion

The greatest mouser on record was a tabby named 'Mickey', owned by Shepherd & Sons Ltd of Burscough, Lancashire who killed more than 22,000 mice during 23 years with the firm. He died in November 1968.

RABBITS**Largest**

The largest breed of domestic rabbit (*Oryctolagus cuniculus*) is the British giant. Adult specimens average 18–20 lb 8.16–9.07 kg but unconfirmed weights up to 30 lb 13.6 kg have been reported for bucks. In April 1980 a five month old female French lop weighing 12 kg 26.45 lb was exhibited at the Reus Fair, NE Spain.

The heaviest recorded wild rabbit (av. weight 3½ lb 1.58 kg) is one of 7 lb 1½ oz 3.21 kg, accidentally killed by Paul Short while he was driving near Grantham, Lincolnshire on 20 Sept 1981.

An unconfirmed weight of 35 lb 15.8 kg was reported for the New Zealand white 'Snowy' from Uxbridge in Sept 1981.

Smallest

The smallest breeds of domestic rabbit are the Netherlands dwarf and the Polish, both of which have a maximum British standard weight of 2¼ lb 1.02 kg at maturity.

Most prolific

The most prolific domestic breeds are the New Zealand white and the Californian. Does produce 5–6 litters a year, each containing 8–12 young (cf. five litters and three to seven young for the wild rabbit).

HARES**Largest**

In November 1956 a Brown hare (*Lepus europaeus*) weighing 15 lb 1 oz 6.83 kg was shot near Welford, Northamptonshire. The average adult weight is 8 lb 3.62 kg.

2. BIRDS (Aves)**Largest Ratite**

The largest living bird is the North African ostrich (*Struthio camelus camelus*), which is found in reduced numbers south of the Atlas Mountains from Upper Senegal and Niger across to the



above: The greatest avian wing span: The Wandering Albatross (*Diomedea exulans*), whose wings have been measured to span 11 ft 11 in 3,63 m (see p. 39). below: The heaviest of birds of prey is the Andean Condor (*Vultur gryphus*) for which an upper weight of 12 kg 26 lb 8 oz has been recorded (see p. 39). (Hans D. Dossenbach/Ardea)



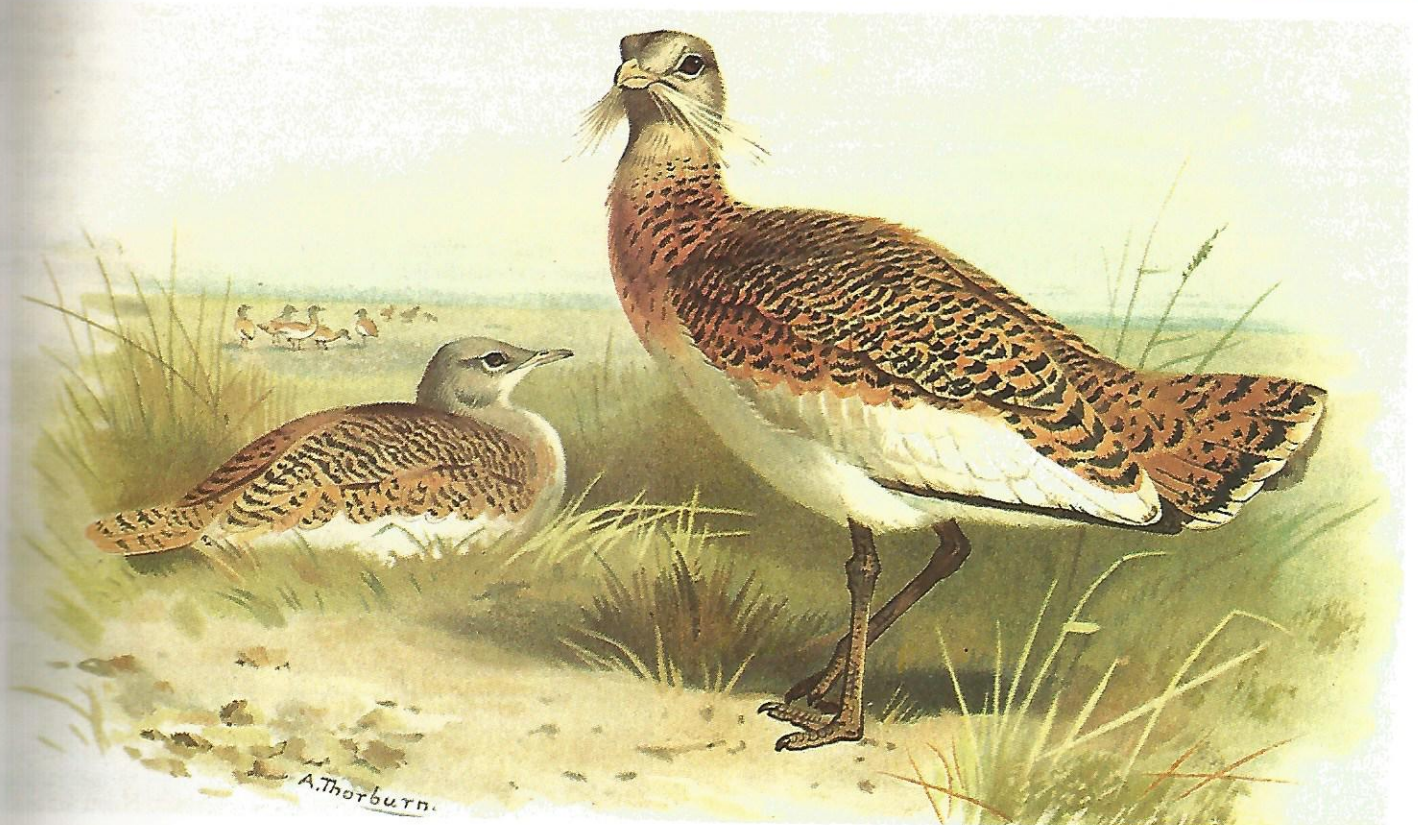
Sudan and central Ethiopia. Male examples of this flightless or ratite sub-species have been recorded up to 9 ft 2,74 m in height and 345 lb 156,5 kg in weight.

Largest Carinate

The heaviest flying bird or carinate is the Kori bustard or Paauw (*Otis kori*) of East and South Africa. Weights up to 40 lb 18 kg have been reliably reported for cock birds shot in South Africa. The Mute swan (*Cygnus olor*), which is resident in Britain, can also reach 40 lb 18 kg on occasion, and there is a record from Poland of a cob weighing 22,5 kg 49.5 lb which could not fly.



above: The Mallee fowl (*Leipoa ocellata*) of Australia, which builds vast incubation mounds for her eggs—sometimes involving material weighing 300 tons/tonnes. (Heather Angel) below: Formerly Britain's heaviest land bird the Great Bustard (*Otis tarda*), which bred in England until 1832, weighing up to 35 lb 15,9 kg. Breeding pairs have been recently reintroduced from Portugal on Porton Down, Salisbury Plain.



The heaviest bird of prey is the Andean condor (*Vultur gryphus*), adult males averaging 20–25 lb 9.09–11.3 kg. An unconfirmed weight of 31 lb 14.7 kg has been claimed for a California condor (*Gymnogyps californianus*) (average weight 20 lb 9 kg) now preserved in the California Academy of Sciences, Los Angeles.

Largest wing span

The Wandering albatross (*Diomedea exulans*) of the southern oceans has the largest wing span of any living bird, adult males averaging 10 ft 4 in 3.15 m with wings tightly stretched. The largest recorded specimen was a male measuring 11 ft 11 in 3.63 m caught by members of the Antarctic research ship USNS *Eltanin* in the Tasman Sea on 18 Sept 1965. The only other bird reliably credited with a wingspread in excess of 11 ft 3.35 m is the vulture-like Marabou stork (*Leptopilius crumeniferus*) of Africa. In the 1930s an extreme measurement of 13 ft 4 in 4.06 m was reported for a male shot in Central Africa, but this species rarely exceeds 9 ft 2.43 m.

Smallest World

The smallest bird in the world is the Bee hummingbird (*Mellisuga helenae*) of Cuba and the Isle of Pines. Adult males (females are slightly larger) measure 57 mm 2.24 in in total length, half of which is taken up by the bill and tail. It weighs 1.6 g 0.056 oz, which means it is lighter than a Privet hawk-moth (2.4 g 0.084 oz). The smallest bird of prey is the 35 g 1.23 oz White-fronted falconet (*Microhierax latifrons*) of NW Borneo which is sparrow-sized.

The smallest sea bird is the Least storm petrel (*Halocyptena microsoma*), which breeds on many of the small islands in the Gulf of California, NW Mexico. Adult specimens average 140 mm 5½ in in total length.

Smallest Great Britain

The smallest regularly-breeding British bird is the Goldcrest (*Regulus regulus*), also known as the Golden crested wren or Kinglet. Adult specimens measure 90 mm 3.5 in total length and weigh between 3.8 and 4.5 g 0.108 and 0.127 oz.

Most abundant Wild

The most abundant species of wild bird is the Red-billed quelea (*Quelea quelea*) of the drier parts of Africa south of the Sahara with a population estimated at 10,000,000,000 of which a tenth are destroyed each year by pest control units. The most abundant sea bird is probably Wilson's storm-petrel (*Oceanites oceanicus*) of the Antarctic. No population estimates have been published, but the number must run into hundreds of millions. Britain's most abundant sea-bird is the Common guillemot (*Uria aalge*) with an estimated 577,000 breeding pairs in 1969–70.

Most abundant Domestic

The most abundant species of domesticated bird is the Chicken, the domesticated form of the wild Red jungle fowl (*Gallus gallus*) of south-east Asia. In 1974 there were believed to be about 4,000,000,000 in the world, or about one chicken for every member of the human race. The fowl stock in Britain was estimated at 130,000,000 in 1972, producing 270,000,000 chicks annually.

Most abundant Great Britain

The commonest wild breeding land bird in Great Britain is the wren (*Troglodytes troglodytes*) with an estimated 10 million pairs nesting after a series of mild winters. The Blackbird (*Turdus merula*), Starling (*Sturnus vulgaris*), House Sparrow (*Passer domesticus*) and the Chaffinch (*Fringilla coelebs*) all have a peak nesting population in excess of 5 million pairs. It was estimated in 1967 that 250,000 pigeon fanciers owned an average of 40 racing pigeons per loft, making a population of c. 10 million in Great Britain.

Rarest World

Because of the practical difficulties involved in assessing bird populations in the wild, it is virtually impossible to establish the identity of the world's rarest living bird. The strongest contenders, however, must be the Kauai Ooaa (*Moho braccatus*) of Kauai, Hawaiian Islands, of which only a single pair survived in 1980 and the Yellow fronted gardener bowerbird, (*Amblyornis flavifrons*) unsighted since 1895, until a single male was observed in Papua New Guinea in 1981.

Rarest Great Britain

According to the British Ornithologists' Union there are more than 40 species of birds which have been recorded only once in the British Isles—most of them since the end of the Second World War in 1945. That which has not recurred for the longest period is the Black-capped petrel (*Pterodroma hasitata*), of the West Indies. A specimen was caught alive on a heath at South-acre, near Swaffham, Norfolk in March or April 1850. On 28–29 May 1979 an Aleutian tern (*Sterna aleutica*) was sighted on the Farne Islands, Northumberland. This bird breeds on the coasts of Alaska and eastern Siberia, and until then had never been recorded outside the N. Pacific. The most tenuously established British bird is the Snowy owl (*Nyctea scandiaca*). During the period 1969–75 one pair bred regularly on Fetlar, Shetland Isles but no males have been sighted since then.

Fastest flying

The fastest flying bird in level flight is the White-throated spine-tailed swift (*Hirundapus caudacutus*). For details see p. 27.

The bird which presents the hunter with the greatest difficulty is the Red-breasted merganser (*Mergus serrator*). On 29 May 1960 a specimen flushed from the Kukpuk River, Cape Thompson, northern Alaska, USA by a light aircraft recorded an air speed of 80 mph 128 km/h in level flight for nearly 13 sec before turning aside.

Fastest and slowest wing beat

The fastest recorded wing beat of any bird is that of the Horned sungem (*Helicactin cornuta*) of tropical South America with a rate of 90 beats a second. Large vultures (family Vulturidae) sometimes exhibit a flapping rate as low as one beat per sec, and condors can cruise on thermals 60 miles 96 km without beating their wings.

Longest lived

The greatest irrefutable age reported for any bird is 72+ years in the case of a male Andean condor (*Vultur gryphus*) named 'Kuzya', which died in Moskovskii Zoologicheskii Park, Moscow, USSR in 1964. This bird had been received as an adult in 1892. The British record is 68+ years in the case of a female European eagle-owl (*Bubo bubo*) which was still alive in 1899. Other records which are regarded as probably reliable include 73 years (1818–91) for a Greater sulphur-crested cockatoo (*Cacatua galerita*); 72 years (1797–1869) for an African grey parrot (*Psittacus erithacus*); 70 years (1770–1840) for a Mute swan (*Cygnus olor*) and 69 years for a raven (*Corvus corax*). In 1972 a Southern ostrich (*Struthio camelus australis*) aged 62 years and 3 months was killed in the Ostrich Abattoir at Oudtshoorn, Cape Province, South Africa. 'Jimmy', a red and green Amazon parrot owned by Mrs Bella Ludford of Liverpool, England was allegedly hatched in captivity on 3 Dec 1870 and lived 104 years in his original brass cage dying on 5 Jan 1975.

Eggs Largest

The largest egg produced by any living bird is that of the ostrich (*Struthio camelus*). The average example measures 6–8 in 15–20 cm in length, 4–6 in 10–15 cm in diameter and weighs 3.63–3.88 lb 1.65–1.78 kg (equal to the volume of two dozen hen's eggs). It requires about 40 min for boiling. The shell though ¼ in 1.5 mm thick can support the weight of a 20 st 127 kg man. The largest egg laid by any bird on the British list is that of the Mute swan (*Cygnus olor*), which measures 4.3–4.9 in 109–124 mm in length and between 2.8 and 3.1 in 71–78.5 mm in diameter. The weight is 12–13 oz 340–368 g.

Eggs Smallest

The smallest egg laid by any bird is that of the Vervain hummingbird (*Mellisuga minima*) of Jamaica. Two specimens measuring less than 10 mm 0.39 in in length weighed 0.365 g 0.0128 oz and 0.375 g 0.0132 oz respectively (cf 0.5 g 0.017 oz for the Bee hummingbird). The smallest egg laid by a bird on the British list is that of the Goldcrest (*Regulus regulus*), which measures 12.2–14.5 mm 0.48–0.57 in in length and between 9.4 and 9.9 mm 0.37 and 0.39 in in diameter with a weight of 0.6 g 0.021 oz. Eggs emitted from the oviduct before maturity, known as 'sports', are not reckoned to be of significance in discussion of relative sizes.

Incubation Longest and shortest

The longest normal incubation period is that of the Wandering

albatross (*Diomedea exulans*), with a normal range of 75–82 days. There is a case of an egg of the Mallee fowl (*Lepus mollis*) of Australia taking 90 days to hatch against its normal incubation of 62 days. The shortest incubation period is the 10 days of the Great spotted woodpecker (*Dendrocopos major*) and the Black-billed cuckoo (*Coccyzus erythrophthalmus*). The idlest of cock birds include hummingbirds (family Trochilidae), Eider duck (*Somateria mollissima*) and Golden pheasant (*Chrysolophus pictus*) among whom the hen bird does 100 per cent of the incubation, whereas the female Common kiwi (*Apteryx australis*) leaves this entirely to the male for 75–80 days.

Longest flights

The greatest distance covered by a ringed bird during migration is 12,000 miles 19 300 km by an Arctic tern (*Sterna paradisaea*), which was banded as a nestling on 5 July 1955 in the Kandalaksha Sanctuary on the White Sea coast and was captured alive by a fisherman 8 miles 13 km south of Fremantle, Western Australia on 16 May 1956.

Highest flying

The highest acceptable altitude recorded for a bird is 27,000 ft 8230 m for 50 Whooper swans (*Cygnus olor*) flying in from Iceland. They were spotted by an airline pilot over the Outer Hebrides on 9 Dec 1967, and the height was also confirmed by air traffic control in Northern Ireland after the swans had been picked up on radar.

Longest airborne

The most aerial of all birds is the Sooty tern (*Sterna fuscata*) which, after leaving the nesting grounds, remains continuously aloft for 3 or 4 years before returning to the breeding grounds. The most aerial land bird is the Common swift (*Apus apus*) which remains 'airborne' for 2–3 years until it is mature enough to breed.

Fastest swimmer

The fastest swimming bird is the Gentoo penguin (*Pygoscelis adeliae*). In January 1913 a small group were timed at 10 m/sec 22.3 mph under water near the Bay of Isles, South Georgia. This is a respectable flying speed for some birds. The deepest diving bird is the Emperor penguin (*Aptenodytes forsteri*) of the Antarctic which can reach a depth of 265 m 870 ft and remain submerged for up to 18 min.

Best acute vision

Birds of prey (Falconiformes) have the keenest eyesight in the avian world, and their visual acuity is at least 8–10 times stronger than that of human vision. The Golden eagle (*Aquila chrysaetos*) can detect an 18 in 46 cm long hare at a range of 2150 yd 1966 m (possibly even 2 miles 3.2 km) in good light and against a contrasting background, and a Peregrine falcon (*Falco peregrinus*) a pigeon at a range of over 3500 ft 1066 m.

Highest g force

Recent American scientific experiments have revealed that the beak of the Red-headed woodpecker (*Melanerpes erythrocephalus*) hits the bark of a tree with an impact velocity of 1300 mph 2092 km/h. This means that when the head snaps back the brain is subject to a deceleration of about 1000 g.

Longest feathers

The longest feathers grown by any bird are those of the cock Long-tailed fowl or Onagadori (a strain of *Gallus gallus*) which have been bred in south-western Japan since the mid 17th century. In 1973 a tail covert measuring 10.6 m 34 ft 9½ in was reported by Masashi Kubota of Kochi, Shikoku. The two central pairs of tail feathers of the flying Reeve's pheasant (*Syrmaium reevesi*) of north and west China can exceed 8 ft 2.43 m.

Most feathers

In a series of 'feather counts' on various species of bird a Whistling swan (*Cygnus columbianus*) was found to have 25,216 feathers, 20,177 of which were on the head and neck. The ruby-throated hummingbird (*Archilochus colubris*) has only 940, although hummingbirds have more feathers per area of body surface than any other living bird.

Oldest and latest cuckoo

It is unlikely that the Cuckoo (*Cuculus canorus*) has ever been

heard and seen in Britain earlier than 2 Mar, on which date one was observed under acceptable conditions by Mr William A. Haynes of Trinder Road, Wantage, Oxfordshire in 1972. The two latest dates are 16 Dec 1912 at Anstey's Cove, Torquay, Devon and 26 Dec 1897 or 1898 in Cheshire.

Champion bird-spotter

The world's leading bird-spotter is Norman Chesterfield (b. 8 Mar 1913) of Wheatley, Ontario, Canada. By January 1982 he had logged 5556 of the 8733 known species.

Nests, Largest

The largest bird's nest on record is one 9½ ft 2.9 m wide and 20 ft 6 m deep built by a pair of Bald eagles (*Haliaeetus leucocephalus*) and possibly their successors near St Petersburg, Florida, USA reported in 1963 and estimated to weigh more than 2 tons/tonnes. The Golden eagle (*Aquila chrysaetos*) also constructs huge nests, and one 15 ft 4.57 m deep was reported from Scotland in 1954. It had been in use for 45 years. The incubation mounds built by the Mallee fowl (*Leipoa ocellata*) of Australia are much larger, having been measured up to 15 ft 4.57 m in height and 35 ft 10.6 m across, and it has been calculated that the nest site may involve the mounding of 300 yd³ 289 m³ of matter weighing 300 tonnes 295 tons.

DOMESTICATED BIRDS

Chicken Heaviest

The heaviest breed of chicken is one called the White Sully developed by Mr Grant Sullens of West Point, California, USA over a period of 7 years. One monstrous rooster named 'Weirdo' reportedly weighed 22 lb 10 kg in January 1973, and was so ferocious that he had already killed two cats and crippled a dog which came too close. The heaviest British breed is the Dorking, with roosters weighing up to 14 lb 6.36 kg.

Chicken flying for distance

The record distance flown by a chicken is 310 ft 6 in 94.64 m by Shorisha (means champion) owned by Morimitzu Meura at Hammatzu, Japan on 8 Mar 1981. Hens are better fliers than cocks.

Turkey Heaviest

The greatest dressed weight recorded for a turkey (*Meleagris gallopavo*) is 78 lb 11¼ oz 35.69 kg for a stag reared by Leacroft Turkeys Ltd of Barnwell, Northants. It won the annual 'heaviest turkey' competition held in London on 8 Dec 1980. Turkeys were introduced into Britain via Spain from Mexico in 1549.

Most expensive

The highest price reached at auction (auctioneer Bernard Cribbins) for a turkey was the £2200 paid by Peter Lane, managing director of W. Fenn, Covent Garden poulterers for the 78 lb 11¼ oz 35.69 kg stag (see above) at The Savoy Hotel, London on 8 Dec 1980.

Longest lived

The longest lived domesticated bird (excluding the ostrich) is the domestic goose (*Anser anser domesticus*) which normally lives about 25 years. On 16 Dec 1976 a gander named 'George' owned by Mrs Florence Hull of Thornton, Lancashire, died aged 49 years 8 months. He was hatched out in April 1927. The longest lived small cagebird is the canary (*Serinus canaria*). The oldest example on record was a 34-year-old cock bird named 'Joey' owned by Mrs K. Ross of Hull. The bird was purchased in Calabar, Nigeria in 1941 and died on 8 Apr 1975. The oldest budgerigar (*Melopsittacus undulatus*) on record was a hen bird named 'Charlie' owned by Miss J. Dinsey of Stonebridge, London, which lived for 29 years 2 months. She died on 20 June 1977.

Most talkative

The world's most talkative bird is a male African grey parrot (*Psittacus erythacus*) named 'Purdle', owned by Mrs Lyn Logue of Golders Green, London, which won the 'Best talking parrot-like bird' title at the National Cage and Aviary Bird Show held in London each December for 12 consecutive years (1965–76). 'Purdle', who has a vocabulary of nearly 1000 words, was taken from a nest in a tree about to be felled at Jinja, Uganda in 1958. He retired undefeated in 1977.

3. REPTILES (*Reptilia*)

(Crocodiles, snakes, turtles, tortoises and lizards.)

Largest and heaviest

The largest reptile in the world is the Estuarine or Salt-water crocodile (*Crocodylus porosus*) of south-east Asia, northern Australia, New Guinea, the Malay archipelago and the Solomon Islands. Adult males average 14–16 ft 4,2–4,8 m in length and scale about 900–1150 lb 408–520 kg. In 1823 a notorious man-eater allegedly 27 ft 8,23 m in length and weighing an estimated 2 tons/tonnes was shot at Jala Jala on Luzon Island in the Philippines after terrorising the neighbourhood for many years, but the dimensions of the skull (preserved in the Museum of Comparative Zoology at Harvard University, Cambridge, Massachusetts, USA) suggest this crocodile must have measured about 20 ft 6,09 m. The holder of the 'official' record is a 20 ft 4 in 6,20 m male which drowned after getting entangled in a fisherman's net at Obo on the Fly River, Papua New Guinea in 1979. In July 1957 an unconfirmed (but probably reliable) length of 28 ft 4 in 8,63 m was reported for an Estuarine crocodile shot by Mrs Kris Pawlowski on MacArthur Bank in the Norman River, north-western Queensland, Australia.

Smallest

The smallest known species of reptile is believed to be *Sphaerodactylus parthenopion*, a tiny gecko found only on the island of Virgin Gorda, one of the British Virgin Islands, in the West Indies. It is known only from 15 specimens, including some gravid females found between 10 and 16 Aug 1964. The three largest females measured 18 mm 0.71 in from snout to vent, with a tail of approximately the same length. It is possible that another gecko, *Sphaerodactylus elasmorhynchus*, may be even smaller. The only known specimen was an apparently mature female with a snout-vent length of 17 mm 0.67 in and a tail the same measurement found on 15 March 1966 among the roots of a tree in the western part of the Massif de la Hotte in Haiti. A species of dwarf chameleon, *Evoloticauda tuberculata* found in Madagascar, and known only from a single specimen, has a snout-vent length of 18 mm 0.71 in and a tail length of 14 mm 0.55 in. Chameleons, however, are more bulky than geckos, and it is not yet known if this specimen was fully grown.

The smallest reptile found in Britain is the Viviparous or Common lizard (*Lacerta vivipara*). Adult specimens have an overall length of 108–178 mm 4.25–7 in.

Fastest

The highest speed measured for any reptile on land is 18 mph 29 km/h for a Six-lined racerunner (*Cnemidophorus sexlineatus*) pursued by a car near McCormick, South Carolina, USA in 1941. The highest speed claimed for any reptile in water is 22 mph 35 km/h by a frightened Pacific leatherback turtle (see next column).

Rarest

A new species of crested iguana (*Brachophylus vitiensis*) was discovered on Yaduatabu, Fiji Islands in January 1979.

Lizards Largest

The largest of all lizards is the Komodo monitor or Ora (*Varanus komodoensis*), a dragonlike reptile found on the Indonesian islands of Komodo, Rintja, Padar and Flores. Adult males average 8 ft 2,43 m in length and weigh 175–200 lb 79–91 kg. Lengths up to 23 ft 7 m (sic) have been quoted for this species, but the largest specimen to be accurately measured was a male presented to an American zoologist in 1928 by the Sultan of Bima which taped 3,05 m 10 ft 0.8 in. In 1937 this animal was put on display in St Louis Zoological Gardens, Missouri, USA for a short period. It then measured 10 ft 2 in 3,10 m in length and weighed 365 lb 166 kg. The longest lizard in the world is the slender Salvadori dragon (*Varanus salvadori*) of New Guinea which has been reliably measured up to 15 ft 7 in 4.75 m long.

Lizards Oldest

The greatest age recorded for a lizard is more than 54 years for a male Slow worm (*Anguis fragilis*) kept in the Zoological Museum in Copenhagen, Denmark from 1892 until 1946.

Chelonians Largest

The largest living chelonian is the Pacific leatherback turtle (*Dermochelys coriacea schlegelii*). The average adult measures 6–7 ft 1,83–2,13 m in overall length (length of carapace 4–5 ft 122–152 cm) and weighs up to 1000 lb 453 kg. The greatest weight reliably recorded is 1908 lb 865 kg for a male captured off Monterey, California, USA on 29 Aug 1961 measuring 8 ft 4 in 2,54 m overall. The largest chelonian found in British waters is the Atlantic leatherback turtle (*Dermochelys coriacea coriacea*). A male which drowned off Crail, Fifeshire, Scotland measured 6 ft 4 in 1,93 m in total length and weighed 772 lb 350 kg.

The largest living tortoise is *Geochelone (Testudo) gigantea* of the Indian Ocean islands of Aldabra, Mauritius, and the Seychelles (introduced 1874). Adult males in the wild sometimes exceed 450 lb 200 kg in weight but much heavier captive specimens have been recorded. One male preserved in the Rothschild Museum at Tring, Herts., weighed 593 lb 269 kg when alive.

Chelonians Longest lived

Tortoises are the longest lived of all vertebrates (see p. 27.) Other reliable records over 100 years include a Common box tortoise (*Testudo carolina*) of 138 years and a European pond-tortoise (*Emys orbicularis*) of 120+ years. The greatest proven age of a continuously observed tortoise is 116+ years for a Mediterranean spur-thighed tortoise (*Testudo graeca*) which died in Paignton Zoo, Devon in 1957.

Chelonians Slowest moving

In a recent 'speed' test carried out in the Seychelles a male giant tortoise (*Geochelone gigantea*) could only cover 5 yd 4,57 m in 43.5 sec (0.23 mph 0,37 km/h) despite the enticement of a female tortoise. The National Tortoise Championship record is 18 ft 5,48 m up a 1:12 gradient in 43.7 sec by 'Charlie' at Tickhill, South Yorkshire on 2 July 1977.

SNAKES

Longest World

The longest of all snakes (average adult length) is the Reticulated python (*Python reticulatus*) of south-east Asia, Indonesia and the Philippines which regularly exceeds 20 ft 6 m. In 1912 a specimen measuring exactly 10 m 32 ft 9½ in was shot near a mining camp on the north coast of Celebes in the Malay Archipelago. Lengths of 37½ ft 11,43 m, 42 ft 12,8 m and even 45 ft 13,7 m have been claimed for the Anaconda (*Eunectes murinus*) of tropical South America, but these extreme measurements were probably based on stretched skins. The greatest authenticated length recorded for an anaconda is 27 ft 9 in 8,45 m for a female killed in Brazil in c. 1960.

Longest In captivity

The longest (and heaviest) snake ever held in captivity was a female reticulated python (*Python reticulatus*) named 'Colossus' who died in Highland Park Zoo, Pennsylvania, USA on 15 Apr 1963. She measured 28 ft 6 in 8,68 m in length, and scaled 320 lb 145 kg at her heaviest. Another female reticulated python named 'Cassius' owned by Mr. Adrian Nyoka of Knaresborough Zoo, North Yorkshire measured about 25 ft 6 in 7,77 m at the time of her death on 3 Apr 1980. She yielded a 29 ft 8,84 m skin.

Longest British

The longest snake found in Britain is the Grass snake (*Natrix natrix*), which is found throughout southern England, parts of Wales and in Dumfries and Galloway, Scotland. Adult males average 660 mm 26 in in length and adult females 760 mm 29.92 in. The longest accurately measured specimen was probably a female killed in South Wales in 1887 which measured 1775 mm 5 ft 10 in.

Shortest

The shortest known snake is the thread snake *Leptotyphlops bilineata*, which is found on the islands of Martinique, Barbados and St Lucia in the West Indies. It has a maximum recorded length of 11,9 cm 4.7 in. The shortest venomous snake is the Striped dwarf garter snake (*Elaps dorsalis*) of South Africa, adults averaging 6 in 152 mm in length.

Heaviest

The heaviest snake is the Anaconda (*Eunectes murinus*) which is

nearly twice as heavy as a Reticulated python (*Python reticulatus*) of the same length. The specimen shot in Brazil in c. 1960 (see Snakes longest world, p. 41) was not weighed, but as it had a maximum bodily girth of 44 in 111 cm it must have scaled nearly 500 lb 227 kg. The heaviest venomous snake is the Eastern diamond-back rattlesnake (*Crotalus adamanteus*) of the south-eastern United States. One specimen measuring 7 ft 9 in 2,36 m in length weighed 34 lb 15 kg. Less reliable lengths up to 8 ft 9 in 2,66 m and weights up to 40 lb 18 kg have been reported. In February 1973 a posthumous weight of 28 lb 12,75 kg was reported for a 14 ft 5 in 4,39 m long King cobra (*Ophiophagus hannah*) at New York Zoological Park (Bronx Zoo).

Venomous Longest

The longest venomous snake in the world is the King cobra (*Ophiophagus hannah*), also called the Hamadryad, of south-east Asia and the Philippines. A specimen collected near Port Dickson in the state of Negri Sembilan, Malaya in April 1937 grew to 18 ft 9 in 5,71 m in London Zoo. It was destroyed at the outbreak of war in 1939.

Oldest

The greatest irrefutable age recorded for a snake is 40 years 3 months and 14 days for a male Common boa (*Boa constrictor constrictor*) named 'Popeye' at Philadelphia Zoological Garden, Pennsylvania, USA, who was euthanased on 15 Apr 1977 because of medical problems associated with advanced age. He was purchased from a London dealer in December 1936.

Fastest moving

The fastest moving land snake is probably the slender Black mamba (*Dendroaspis polylepis*). On 23 Apr 1906 an angry Black mamba was timed at a speed of 7 mph 11 km/h over a measured distance of 47 yd 43 m near Mbuyuni on the Serengeti Plains, Tanzania. Stories that Black mambas can overtake galloping horses (maximum speed 43.26 mph 69,62 km/h) are wild exaggerations, though a speed of 15 mph 24 km/h may be possible for short bursts over level ground. The British grass snake (*Natrix natrix*) has a maximum speed of 4.2 mph 6,8 km/h.

Most venomous

The world's most venomous snake is the sea snake *Hydrophis belah* which has a venom one hundred times as toxic as that of the Australian taipan (*Oxyuranus scutellatus*). The snake abounds around Ashmore Reef in the Timor Sea, off the coast of North West Australia. The most venomous land snake is the Small scaled or Fierce snake (*Parademansia microlepidotus*) of south-western Queensland and north-eastern South Australia which has a venom nine times as toxic as that of the Tiger snake (*Notochis scutatus*) of South Australia and Tasmania. One specimen yielded 110 mg 0,00385 oz after milking, a quantity sufficient to kill at least 125,000 mice. Until 1976 this 2 m 6 ft 6 3/4 in long snake was regarded as a western form of the taipan, but its venom differs significantly from the latter. It is estimated that between 30,000 and 40,000 people (excluding Chinese and Russians) die from snakebite each year, 75 per cent of them in densely populated India. Burma has the highest mortality rate with 15.4 deaths per 100,000 population per annum.

The largest of all snakes, the Reticulated Python (*Python reticulatus*) which has been measured at 10 m 32 ft 9 1/2 in. The specimen below had just swallowed a large bush pig (see p. 41).



Most venomous Britain

The only venomous snake in Britain is the adder (*Vipera berus*). Since 1890 ten people have died after being bitten by this snake, including six children. The most recently recorded death was on 1 July 1975 when a 5-year-old was bitten at Callander, Central, Scotland and died 44 hr later. The longest recorded specimen was a female measuring 43 1/2 in 110,5 cm which was killed by Graham Perkins of Paradise Farm, Pontrilas, Hereford and Worcester in August 1977.

Longest fangs

The longest fangs of any snake are those of the Gaboon viper (*Bitis gabonica*) of tropical Africa. In a 6 ft 1,83 m long specimen they measured 50 mm 1.96 in. On 12 Feb 1963 a Gaboon viper bit itself to death in the Philadelphia Zoological Gardens, Philadelphia, Pennsylvania, USA. Keepers found the dead snake with its fangs deeply embedded in its own back.

4. AMPHIBIANS (*Amphibia*)

Largest World

The largest species of amphibian is the Chinese giant salamander (*Andrias davidianus*), which lives in the cold mountain streams and marshy areas of north-eastern, central and southern China. The average adult measures 3 ft 9 in 1,14 m in total length and weighs 55–66 lb 25–30 kg. One huge individual collected in Hunan Province in southern China measured 180 cm 5 ft 11 in in total length and weighed 65 kg 143 lb. The much rarer Japanese giant salamander (*Andrias japonicus*) is slightly smaller, but one captive specimen weighed 40 kg 88 lb when alive and 45 kg 100 lb after death, the body having absorbed water from the aquarium.

Largest Britain

The heaviest British amphibian is the Common toad (*Bufo bufo*) of which a female has been weighed at 114 g 4 oz.

The longest is the Warty or Great crested newt (*Triturus cristatus*). One female specimen collected at Hampton, Greater London measured 162 mm 6.37 in in total length.

Smallest World

The smallest species of amphibian is believed to be the arrow-poison frog *Sminthillus limbatus*, found only in Cuba. Adult specimens have a snout-vent length of 8,5–12,4 mm 0.44–0.48 in.

Smallest Britain

The smallest amphibian found in Britain is the Palmate newt (*Triturus helveticus*). Adult specimens measure 7,5–9,2 cm 2.95–3.62 in in total length and weigh up to 2,39 g 0.083 oz. The Natterjack or Running toad (*Bufo calamita*) has a maximum snout-vent length of only 8 cm 3.14 in. but it is a bulkier animal.

Longest lived

The greatest authentic age recorded for an amphibian is about 55 years for a male Japanese giant salamander (*Andrias japonicus*) which died in the aquarium at Amsterdam Zoological Gardens on 3 June 1881. It was brought to Holland in 1829, at which time it was estimated to be three years old.

Highest and lowest

The greatest altitude at which an amphibian has been found is 8000 m 26,246 ft for a Common toad (*Bufo vulgaris*) collected in the Himalayas. This species has also been found at a depth of 340 m 1115 ft in a coal mine.

Most poisonous

The most active known poison is the batrachotoxin derived from the skin secretions of the Golden arrow-poison frog (*Phyllobates terribilis*) of western Colombia, South America, which is at least 20 times more toxic than that of any other known arrow poison frog. An average adult specimen contains enough poison (1100 micrograms 0.038 oz) to kill 2200 people.

Newt Largest world

The largest newt in the world is the Pleurodele or Ribbed newt (*Pleurodeles waltl*), which is found in Morocco and on the

Berlin Peninsula. Specimens measuring up to 40 cm 15.74 in in total length and weighing over 1 lb 450 g have been reliably reported.

New Smallest world

The smallest newt in the world is believed to be the Striped newt (*Notophthalmus perstriatus*) of the south-eastern United States. Adult specimens average 51 mm 2.01 in in total length.

Frog Largest World

The largest known frog is the rare Goliath frog (*Rana goliath*) of Cameroun and Equatorial Guinea. A female weighing 3306 g 7 lb 4.5 oz was caught in the River Mbia, Equatorial Guinea on 23 Aug 1960. It had a snout-vent length of 34 cm 13.38 in and measured 81.5 cm 32.08 in overall with legs extended.

Frog Largest Britain

The largest frog found in Britain is the introduced Marsh frog (*Rana r. ridibunda*). Adult males have been measured up to 96 mm 3.77 in snout to vent, and adult females up to 133 mm 5.25 in, the weight ranging from 60 to 95 g 1.7-3 oz.

Longest jump

The record for three consecutive leaps is 10.3 m 33 ft 5½ in by a female South African sharp-nosed frog (*Rana oxyrhyncha*) named 'Santjie' at a frog Derby held at Lurula Natal Spa, Paulpietersburg, Natal on 21 May 1977. At the annual Calaveras County Jumping Frog Jubilee at Angels Camp, California, USA in 1975 another specimen 'Ex Lax' made a single leap of 17 ft 6¾ in 5.35 m for its owner Bill Moniz.

Tree frog Largest

The largest species of tree frog is *Hyla vasta*, found only on the island of Hispaniola (Haiti and the Dominican Republic) in the West Indies. The average snout-vent length is about 9 cm 3.54 in but a female collected from the San Juan River, Dominican Republic, in March 1928 measured 14.3 cm 5.63 in.

Tree frog Smallest

The smallest tree frog in the world is the Least tree frog (*Hyla ocularis*), found in the south-eastern United States. It has a maximum snout-vent length of 15.8 mm 0.62 in.

Toad Largest World

The most massive toad in the world is probably the Marine toad (*Bufo marinus*) of tropical South America. An enormous female collected on 24 Nov 1965 at Miraflores Vaupes, Colombia and later exhibited in the Reptile House at Bronx Zoo, New York City, USA had a snout-vent length of 23.8 cm 9.37 in and weighed 1302 g 2 lb 11¼ oz at the time of its death in 1967.

Toad Largest Britain

The largest toad and heaviest amphibian found in Britain is the Common toad (*Bufo bufo*). Females of up to 102 mm 3.94 in in length and 114 g 3.2 oz have been recorded.

Toad Smallest World

The smallest toad in the world is the sub-species *Bufo taitanus beiranus*, first discovered in c. 1906 near Beira, Mozambique, East Africa. Adult specimens have a maximum recorded snout-vent length of 24 mm 0.94 in.

Salamander Smallest

The smallest species of salamander is the Pygmy salamander (*Desmognathus wrighti*), which is found only in Tennessee, North Carolina and Virginia, USA. Adult specimens measure 37-50.8 mm 1.45-2.0 in in total length.

5. FISHES (*Agnatha, Gnathostomata*)

Largest marine World

The largest fish in the world is the rare plankton-feeding Whale shark (*Rhiniodon typus*), which is found in the warmer areas of the Atlantic, Pacific and Indian Oceans. It is not, however, the largest marine animal, since it is smaller than the larger species of whales (mammals). In 1919 a Whale shark measuring 10 wa (= 60 ft 9 in, 18.5 m) in length and weighing an estimated 42.4 tons 43 tonnes was trapped in a bamboo stake-trap at Koh



above: The largest living chelonian, the Pacific leatherback turtle (*Dermochelys coriacea schlegelii*) which averages up to 7 ft 2.13 m in length and 1000 lb 453 kg in weight (see p. 41). (B & V Taylor/Ardea)

below: The Komodo monitor or Ora (*Varanus komodoensis*) of Indonesia, the largest of all lizards. It can exceed 300 lb 136 kg (see p. 41). (K. W. Fink/Ardea)



Chik, in the Gulf of Siam. The largest carnivorous fish (excluding plankton eaters) is the comparatively rare Great white shark (*Carcharodon carcharias*), also called the 'Maneater', which ranges from the tropics to temperate zone waters. In June 1930 a specimen measuring 37 ft 11.27 m in length was reportedly trapped in a herring weir at White Head Island, New Brunswick, Canada but this measurement is unconfirmed. In June 1978 a great white shark measuring 29 ft 6 in 9 m in length was killed after a fierce battle by fishermen at San Miguel in the Azores. It weighed more than 10,000 lb 4536 kg.

The longest of the bony or 'true' fishes (Pisces) is the Russian sturgeon (*Acipenser huso*), also called the Beluga, which is found in the temperate areas of the Adriatic, Black and Caspian Seas but enters large rivers like the Volga and the Danube for spawning. Lengths up to 8 m 26 ft 3 in have been reliably reported, and a gravid female taken in the estuary of the Volga in 1827 weighed 1474.2 kg 1.44 tons. The heaviest bony fish in the world is the Ocean sunfish (*Mola mola*), which is found in all tropical, sub-tropical and temperate waters. On 18 Sept 1908 a huge specimen was accidentally struck by the SS *Fiona* off Bird Island about 40 miles 65 km from Sydney, New South Wales, Australia and towed to Port Jackson. It measured 14 ft 4.26 m between the anal and dorsal fins and weighed 2.24 tons 2.28 tonnes.

The largest fish ever recorded in the waters of the British Isles was a 36 ft 6 in 11.12 m Basking shark (*Cetorhinus maximus*) washed ashore at Brighton, East Sussex in 1806. It weighed an estimated 8 tons tonnes. The largest bony fish found in British waters is the Ocean sunfish (*Mola mola*). A specimen weighing 800 lb 363 kg stranded near Montrose, Scotland on 14 Dec 1960 was sent to the Marine Research Institute in Aberdeen.

Largest Freshwater World

The largest fish which spends its whole life in fresh or brackish water is the rare Pa beuk or Pla buk (*Pangasianodon gigas*), a giant catfish, which is found in the deep waters of the Mekong River of Laos and Thailand. Adult males average 8 ft 2.43 m in length and weigh about 360 lb 163 kg. This size was exceeded by the European catfish or Wels (*Silurus glanis*) in earlier times (in the 19th century lengths up to 15 ft 4.57 m and weights up to 720 lb 336.3 kg were reported for Russian specimens), but today anything over 6 ft 1.83 m and 200 lb 91 kg is considered large. The Arapaima (*Arapaima glanis*), also called the Pirarucu, found in the Amazon and other South American rivers and often claimed to be the largest freshwater fish, averages 6½ ft 2 m and 150 lb 68 kg. The largest 'authentically recorded' measured 8 ft 2.44 m in length and weighed 325 lb 147 kg. It was caught in the Rio Negro, Brazil in 1836. In September 1978, a Nile perch (*Lates niloticus*) weighing 416 lb 188.6 kg was netted in the eastern part of Lake Victoria, Kenya.

Largest Freshwater Britain

The largest fish ever caught in a British river was a Common sturgeon (*Acipenser sturio*) weighing 507½ lb 230 kg and measuring 9 ft 2.74 m, which was accidentally netted in the Severn at Lydney, Gloucestershire on 1 June 1937. Larger specimens have been taken at sea—notably one weighing 700 lb 317 kg and 10 ft 5 in 3.18 m long netted by the trawler *Ben Urie* off Orkney and landed at Aberdeen on 18 Oct 1956.

Smallest Marine

The shortest recorded marine fish—and the shortest known vertebrate—is the dwarf goby (*Trimmatom nanus*) of the Chagos Archipelago, central Indian Ocean. In one series of 92 specimens collected by the 1978–9 Joint Services Chagos Research Expedition of the British Armed Forces the adult males averaged 8.6 mm 0.338 in in length and the adult females 8.9 mm 0.350 in. The lightest of all vertebrates and the smallest catch possible for any fisherman is the dwarf goby (*Schindleria pinnatus*) from Samoa which measures 12–19 mm 0.47–0.74 in. Mature specimens have been known to weigh only 1 mg, which is equivalent to 17,750 to the oz. The smallest British marine fish is Guillet's goby (*Lebutus guiletti*) which does not exceed 24 mm 0.94 in. It has been recorded from the English Channel, the west coast of Ireland and the Irish Sea. The smallest known shark is the Long-faced dwarf shark (*Squaliolus laticaudus*) of the western Pacific which does not exceed 150 mm 5.9 in.

Smallest Freshwater

The shortest and lightest freshwater fish is the Dwarf pygmy goby (*Pandaka pygmaea*), a colourless and nearly transparent species found in the streams and lakes of Luzon in the Philippines. Adult males measure only 7.5–9.9 mm 0.28–0.38 in in length and weigh 4–5 mg 0.00014–0.00017 oz.

The cosmopolitan sailfish (*Istiophorus platypterus*) is generally considered to be the fastest species of fish, although the practical difficulties of measurement make data extremely difficult to secure. A figure of 68.1 mph 109.7 km/h (100 yd 91 m in 3 sec) has been cited for one off Florida, USA. The swordfish (*Xiphias gladius*) has also been credited with very high speeds, but the evidence is based mainly on bills that have been found deeply embedded in ships' timbers. A speed of 50 knots (57.6 mph 92.7 km/h) has been calculated from a penetration of 22 in 56 cm by a bill into a piece of timber, but 30–35 knots (35–40 mph 56–64 km/h) is the most conceded by some experts. A Wahoo (*Acanthocybium solandri*), 1.1 m 43 in in length is capable of attaining a speed of 77 km/h 47.8 mph. A large Bluefin tuna (*Thunnus thynnus*) is capable of even higher speeds but has not been clocked above 43.4 mph 69.8 km/h in a 20 sec dash. The Four-winged flying fish (*Cypselurus heterurus*) may also exceed

40 mph 64 km/h during its rapid rush to the surface before take-off (the average speed in the air is about 35 mph 56 km/h). Record flights of 90 sec, 36 ft 11 m in altitude and 1110 m 3640 ft in length have been recorded in the tropical Atlantic.

Longest lived

Aquaria are of too recent origin to be able to establish with certainty which species of fish can be regarded as being the longest lived. Early indications are, however, that it is the Lake sturgeon (*Acipenser fulvescens*) of North America. In one study of the growth rings (annuli) of 966 specimens caught in the Lake Winnebago region, Wisconsin, USA between 1951 and 1954 the oldest sturgeon was found to be a male (length 2.01 m 6 ft 7 in) which gave a reading of 82 years and was still growing. In July 1974 a growth ring count of 228 years (*sic*) was reported for a female Koi fish, a form of fancy carp, named 'Hanako' living in a pond in Higashi Shirakawa, Gifu Prefecture, Japan, but the greatest authoritatively accepted age for this species is 'more than 50 years'.

In 1948 the death was reported of an 88-year-old female European eel (*Anguilla anguilla*) named 'Putte' in the aquarium at Halsingborg Museum, southern Sweden. She was allegedly born in the Sargasso Sea, North Atlantic in 1860, and was caught in a river as a three-year-old elver.

Oldest goldfish

Goldfish (*Carassius auratus*) have been reported to live for over 40 years in China. The British record is held by a specimen named 'Fred' owned by Mr A. R. Wilson of Worthing, Sussex, which died on 1 Aug 1980, aged 41 years.

Shortest lived

The shortest-lived fishes are probably certain species of the sub-order Cyprinodontei (killifish) found in Africa and South America which normally live about eight months in the wild state.

Most abundant

The most abundant species of fish in the world is probably the 3 in 76 mm long deep-sea bristlemouth *Cyclothone elongata* which has a worldwide distribution.

Deepest

The greatest depth from which a fish has been recovered is 8300 m 27,230 ft in the Puerto Rico Trench (27,488 ft 8366 m) in the Atlantic by Dr Gilbert L. Voss of the US research vessel *John Elliott* who took a 6½ in 16.5 cm long *Bassogigas profundissimus* in April 1970. It was only the fifth such brotulid ever caught. Dr Jacques Picard and Lieutenant Don Walsh, US Navy, reported they saw a sole-like fish about 1 ft 33 cm long (tentatively identified as *Chascanopsetta lugubris*) from the bathyscaphe *Trieste* at a depth of 35,802 ft 10,912 m in the Challenger Deep (Marianas Trench) in the western Pacific on 24 Jan 1960. This sighting, however, has been questioned by some authorities, who still regard the brotulids of the genus *Bassogigas* as the deepest-living vertebrates.

Most and least eggs

The Ocean sunfish (*Mola mola*) produces up to 300,000,000 eggs, each of them measuring about 0.05 in 1.3 mm in diameter. The egg yield of the tooth carp *Jordanella floridae* of Florida, USA is only c. 20 over a period of several days.

Most Valuable

Benihana, a Japanese ranchu or lion-head goldfish, winner of the Japanese, British and North American triple crown was valued in July 1980 at \$10,000 (then £4250).

Dr Takayaki Hosogi, the owner of 'Fujitavo', a 7 year old 35 in 89 cm long carp which won the All-Japan Koi Championship on 1 Mar 1982, refused an offer of £69,400.

Most venomous

The most venomous fish in the world are the Stonefish (*Synanceidae*) of the tropical waters of the Indo-Pacific, and in particular *Synanceja horrida* which has the largest venom glands of any known fish. Direct contact with the spines of its fins, which contain a strong neurotoxic poison, often proves fatal.

Most electric

The most powerful electric fish is the Electric eel (*Electrophorus electricus*), which is found in the rivers of Brazil, Colombia, Venezuela and Peru. An average sized specimen can discharge 400 volts at 1 ampere, but measurements up to 650 volts have been recorded.

River Thames

The first salmon caught in the Thames since June 1833 was taken at West Thurrock Power Station, Essex in November 1974 and weighed 8 lb 4½ oz 3,757 kg.

6. STARFISHES (*Asteroidea*)

Largest

The largest of the 1600 known species of starfish in terms of total arm span is the very fragile brisingid *Midgardia xandaros*. A specimen collected by the Texas A & M University research vessel *Alaminos* in the southern part of the Gulf of Mexico in the late summer of 1968, measured 1380 mm 54.33 in tip to tip, but the diameter of its disc was only 26 mm 1.02 in. Its dry weight was 70 g 2.46 oz. The heaviest species of starfish is the five-armed *Thromidia catalai* of the Western Pacific. One specimen collected off Ilet Amedee, New Caledonia on 14 Sept 1969 and later deposited in Noumea Aquarium weighed an estimated 6 kg 13.2 lb (total arm span 630 mm 24.8 in). The largest starfish found in British waters is the Spiny starfish (*Marthasterias glacialis*). In January 1979 Jonathon MacNeil of the Isle of Barra, Western Isles, Scotland found a specimen on the beach which originally measured 30 in 76.2 cm from arm tip to arm tip.

Smallest

The smallest known starfish is *Marginaster capreenis*, found deep in the Mediterranean, which is not known to exceed 20 mm 0.78 in in diameter. The smallest starfish found in British waters is the Cushion starfish (*Asterina gibbosa*) which measures up to c. 60 mm 2.36 in in diameter but is usually c. 25 mm 1 in across.

Deepest

The greatest depth from which a starfish has been recovered is 7584 m 24,881 ft for a specimen of *Porcellanaster ivanovi* collected by the USSR research ship *Vityaz* in the Marianas Trench, in the West Pacific c. 1962.

7. ARACHNIDS (*Arachnida*)

SPIDERS (order Araneae)

Largest World

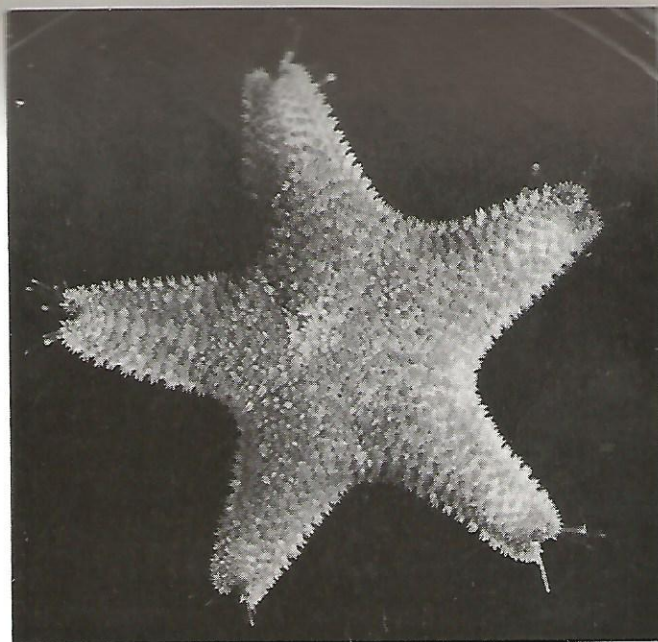
The world's largest known spiders are the exceptionally bulky theraphosid spiders of the genera *Lasiodora* and *Grammostola* of Brazil, both of which have been credited with leg spans in excess of 10 in 25 cm. One female *Lasiodora klugi* collected at Manaos, Brazil in 1945 weighed almost 3 oz 85 g (leg span 241 mm 9½ in).

Largest Britain

Of the 617 known British species of spider covering an estimated population of over 500,000,000,000,000, the Cardinal spider (*Tegenaria parietina*) has the greatest leg span. In 1974 one spanning 5.3 in 13.4 cm was trapped in a house in Wokingham, Berkshire but later escaped. This spider is found only in southern England. The well-known 'Daddy Longlegs' spider (*Pholcus phalangioides*) rarely exceeds 3 in 75 mm in leg span, but one out-sized specimen collected in England measured 6 in 15.2 cm across. The heaviest spider found in Britain is the orb weaver (*Araneus quadratus*). On 30 Aug 1981 a specimen weighing 1,698 g 0.06 oz was captured at Canterbury Field Study Centre, Kent.

Smallest World

The smallest known spider is *Patu marplei* (family Symphytonathidae) of Western Samoa. The type specimen (male) found in moss at c. 2000 ft 610 m altitude near Malolelei, Upolu in January 1956 measure 0.43 mm 0.016 in overall—or half the size of this full stop. The smallest spider found in Britain is the money



Asterina gibbosa, the cushion starfish, the smallest asteroid found in British waters which could be covered by a 10 pence piece. (Geoff Potts)

spider *Glyphesis cottonae*, which is confined to a swamp near Beaulieu Road Station, New Forest, Hampshire and Thursley Common, Surrey. Adult specimens of both sexes have a body length of 1 mm 0.039 in.

Rarest

The most elusive of all spiders are the rare trapdoor spiders of the genus *Liphistius*, which are found in south-east Asia. The most elusive spiders in Britain are the four species which are known only from the holotype specimen. These are the jumping spiders *Salticus mutabilis* (1 male Bloxworth, Dorset, 1860) and *Heliophanus melinus* (1 female Bloxworth, 1870); the crab spider *Philodromus buxi* (1 female Bloxworth pre-1879); and the cobweb spider *Robertus insignis* (1 male Norwich, 1906).

Fastest

The highest speed recorded for a spider on a level surface is 1.73 ft/sec 53 cm/sec (1.17 mph 1.88 km/h) in the case of a specimen of *Tegenaria atrica*. This is 33 times her body length per sec compared with the human record of 5½ times.

Longest lived

The longest lived of all spiders are the primitive *Mygalomorphae* (tarantulas and allied species). One mature female tarantula collected at Mazatlan, Mexico in 1935 and estimated to be 12 years old at the time, was kept in a laboratory for 16 years, making a total of 28 years. The longest-lived British spider is probably the purse web spider (*Atypus affinis*). One specimen was kept in a greenhouse for nine years.

Largest webs

The largest webs are the aerial ones spun by the tropical orb weavers of the genus *Nephila*, which have been measured up to 18 ft 9¾ in 573 cm in circumference. The smallest webs are spun by spiders like *Glyphesis cottonae*, etc. which are about the size of a postage stamp.

Most venomous

The most venomous spiders in the world are the Brazilian wandering spiders of the genus *Phoneutria*, and particularly *P. fera*, which has the most active neurotoxic venom of any living spider. These large and highly aggressive creatures frequently enter human dwellings and hide in clothing or shoes. When disturbed they bite furiously several times, and hundreds of accidents involving these species are reported annually. Fortunately an effective antivenin is available, and when deaths do occur they are usually children under the age of seven.

8. CRUSTACEANS (*Crustacea*)

(Crabs, lobsters, shrimps, prawns, crayfish, barnacles, water fleas, fish lice, woodlice, sandhoppers, krill, etc.)

Largest World

The largest of all crustaceans (although not the heaviest) is the *sanshouo* or giant spider crab (*Macrocheira kaempferi*), also called the stilt crab, which is found in deep waters off the south-eastern coast of Japan. Mature specimens usually have a 12–14 in 30–35 cm wide body and a claw-span of 8–9 ft 2.43–2.74 m but unconfirmed measurements up to 19 ft 5.79 m have been reported. A specimen with a claw span of 12 ft 1½ in 3.69 m weighed 41 lb 18.6 kg.

The largest species of lobster, and the heaviest of all crustaceans, is the American or North Atlantic lobster (*Homarus americanus*). On 11 Feb 1977 a specimen weighing 44 lb 6 oz 20.14 kg and measuring 3 ft 6 in 1.06 m from the end of the tail-fan to the tip of the largest claw was caught off Nova Scotia, Canada and later sold to a New York restaurant owner.

Largest Britain

The largest crustacean found in British waters is the Common or European lobster (*Homarus vulgaris*), which averages 2–3 lb 900–1360 g. In June 1931 an outsized specimen weighing 20½ lb 5.80 kg and measuring 4 ft 1½ in 1.26 m in total length, was caught in a caisson during the construction of No. 3 jetty at Fowey, Cornwall. Its crushing claw weighed 2 lb 10 oz 1188 g after the meat had been removed. The largest crab found in British waters is the Edible or Great crab (*Cancer pagurus*). In 1895 a crab measuring 11 in 279 mm across the shell and weighing 14 lb 6.35 kg was caught off the coast of Cornwall.

Smallest

The smallest known crustaceans are water fleas of the genus *Aloella*, which may measure less than 0.25 mm 0.0098 in in length. They are found in British waters. The smallest known lobster is the Cape lobster (*Homarus capensis*) of South Africa which measures 10–12 cm 3.9–4.7 in in total length. The smallest crabs in the world are the aptly named pea crabs (family *Pinnothereidae*). Some species have a shell diameter of only 0.25 in 6.3 mm, including *Pinnotheres pisum* which is found in British waters.

Longest lived

The longest lived of all crustaceans is the American lobster (*Homarus americanus*). Very large specimens may be as much as 50 years old.

Vertical distribution

The greatest depth from which a crustacean has been recovered is 10 500 m 34,450 ft for *live* amphipods from the Challenger Deep, Marianas Trench, West Pacific by the US research vessel *Thomas Washington* in November 1980. Amphipods and isopods have also been collected in the Ecuadorean Andes at a height of 13,300 ft 4053 m.

9. INSECTS (*Insecta*)

Heaviest World

The heaviest insects in the world are the Goliath beetles (family *Sarracidae*) of equatorial Africa. The largest members of the group are *Goliathus regius* and *Goliathus goliathus* (= *giganteus*) and in one series of fully-grown males the weight ranged from 70 to 100 g 2.5–3.5 oz.

Heaviest Britain

The heaviest insect found in Britain is the Stag beetle (*Lucanus cervus*) which is widely distributed over southern England. The largest specimen on record was a male collected at Sheerness, Kent, in 1871 and now preserved in the British Museum (Natural History), London, which measures 87.4 mm 3.04 in in length (body plus mandibles) and probably weighed over 6000 mg 0.21 oz when alive.

BUTTERFLIES AND MOTHS (order Lepidoptera)

Largest World

The largest known butterfly is the Queen Alexandra birdwing (*Ornithoptera alexandrae*) of New Guinea. Females may have a wing span exceeding 280 mm 11.02 in and weigh over 5 g 0.176 oz. The largest moth in the world (although not the heaviest) is the Hercules moth (*Cosmioscra hercules*) of tropical Australia and New Guinea. A wing area of up to 40.8 in² 263.2 cm² and a wing span of 280 mm 11 in have been recorded. In 1948 an unconfirmed measurement of 360 mm 14.17 in was reported for a female captured near the post office at the coastal town of Innisfail, Queensland, Australia. The rare Owlet moth (*Thysania agrippina*) of Brazil has been measured up to 300 mm 11.81 in wing span, and the Philippine atlas moth (*Attacus crameri caesar*) up to 280 mm 11.02 in, but both these species are lighter than *C. hercules*.

Largest Britain

The largest (but not the heaviest) of the 21,000 species of insect found in Britain is the very rare Death's head hawkmoth (*Acherontia atropos*). One female found dead in a garden at Tiverton, Devon, in 1931 had a wing span of 5.75 in 145 mm and weighed nearly 3 g 0.10 oz. The largest butterfly found in Britain is the Monarch butterfly (*Danaus plexippus*), also called the Milkweed or Black-veined brown butterfly, a rare vagrant which breeds in the southern United States and Central America. It has a wing span of up to 5 in 127 mm and weighs about 1 g 0.04 oz. The largest *native* butterfly is the Swallowtail (*Papilio machaon britannicus*), females of which have a wing span up to 100 mm 3.93 in. This species is now confined to the Norfolk Broads and Wicken Fen, Cambridgeshire.

Smallest World and Britain

The smallest of the 140,000 known species of Lepidoptera are the moths *Johanssonia acetosea* found in Britain, and *Stigmella ridiculosa* from the Canary Islands, which have a wing span of c. 2 mm 0.08 in with a similar body length. The world's smallest known butterfly is the Dwarf blue (*Brephidium barberae*) of South Africa. It has a wing span of 14 mm 0.55 in. The smallest butterfly found in Britain is the Small blue (*Cupido minimus*), which has a wing span of 19–25 mm 0.75–1.0 in.

Rarest

The rarest British butterfly is the Chequered Skipper (*Carterocephalus palaemon*) now confined to a single site near Fort William, Inverness, Scotland. The Large blue (*Maculinea arion*) was officially declared extinct in 1979. Since its demise this butterfly has reportedly been seen in various parts of Britain, but most of these sightings have been of the very similar Holly Blue (*Celastrina argiolus*).

Most acute sense of smell

The most acute sense of smell exhibited in nature is that of the male Emperor moth (*Eudia pavonia*) which, according to German experiments in 1961, can detect the sex attractant of the virgin female at the almost unbelievable range of 11 km 6.8 miles upwind. This scent has been identified as one of the higher alcohols (C₁₆H₂₉OH), of which the female carries less than 0.0001 mg.

Longest

The longest insect in the world is the giant stick-insect *Pharnacia serratifemur* of Indonesia, females of which have been measured up to 330 mm 13 in in body length. The longest known beetles (excluding antennae) are the Hercules beetles (*Dynastes hercules* and *D. neptunus*) of Central and South America, which have been measured up to 190 mm 7.48 in and 180 mm 7.08 in respectively. More than half the length however, is taken up by the prothoracic horn.

Smallest World

The smallest insects recorded so far are the 'Hairy-winged' beetles of the family *Psyllidae* (= *Trichopterygidae*) and the 'battledore-wing fairy flies' (parasitic wasps) of the family *Myrmariidae*. They measure only 0.2 mm 0.008 in in length, and the fairy flies have a wing span of only 1 mm 0.04 in. This makes them smaller than some of the protozoa (single-celled animals). The male bloodsucking banded louse *Enderleinellus zonatus*, ungorged, and the parasitic wasp (*Caraphractus cinctus*) may



The very rare Death's head hawkmoth, the largest insect found in Britain with a wingspan of $5\frac{3}{4}$ in 145 mm (see p. 46). (Heather Angel)



above: The Quahog (*Venus mercenaria*) of the North Atlantic which holds the mollusca longevity record. This species may live for 150 years (see p. 49). (Heather Angel) left: The tiny parasitic Pea Crab, which lives in the mantle cavities of bivalve molluscs. It is the smallest crab in the world (see p. 46). (Heather Angel)

each weigh as little as 0,005 mg, or 5,670,000 to an oz. The eggs of the latter each weigh 0,0002 mg, or 141,750,000 to an oz.

Commonest

The most numerous of all insects are the Springtails (Order Collembola), which have a very wide geographical range. It has been calculated that the top 9 in 288 mm of soil in one acre of grassland contains 230,000,000 springtails or more than 5000 per square foot 465/m².

Fastest flying

Experiments have proved that the widely publicised claim by an American entomologist in 1926 that the Deer bot-fly (*Cephenemyia pratti*) could attain a speed of 818 mph 1316 km/h (sic) was wildly exaggerated. If true it would have generated a supersonic 'pop'! Acceptable modern experiments have now established that the highest maintainable airspeed of any insect, including the Deer bot-fly, is 24 mph 39 km/h, rising to a maximum of 36 mph 58 km/h for short bursts. A relay of bees (maximum speed 11 mph 18 km/h) would use only a gallon of nectar in cruising 4,000,000 miles 6,5 million km at an average speed of 7 mph 11 km/h.

Longest lived

The longest-lived insects are the Splendour beetles (*Buprestidae*), some of which remain in the larva stage for more than 30 years. Queen termites (*Isoptera*), previously thought to live 50 years or more, are now known to have a maximum lifespan of about 15 years.

Loudest

The loudest of all insects is the male cicada (family Cicadidae). At 7400 pulses/min its tymbal organs produce a noise (officially described by the United States Department of Agriculture as 'Tsh-ee-EEEE-e-ou') detectable more than a quarter of a mile 400 m distant. The only British species is the very rare Mountain cicada (*Cicadetta montana*), which is confined to the New Forest area in Hampshire.

Southernmost

The farthest south at which any insect has been found is 77° S

(900 miles 1450 km from the South Pole) in the case of a spring-tail (order Collembola).

Largest locust swarm

The greatest swarm of Desert locusts (*Schistocera gregaria*) ever recorded was one covering an estimated 2000 miles² 5180 km² observed crossing the Red Sea in 1889. Such a swarm must have contained about 250,000,000,000 insects weighing about 500,000 tons 508 000 tonnes.

Fastest wing beat

The fastest wing beat of any insect under natural conditions is 62,760 a min by a tiny midge of the genus *Forcipomyia*. In experiments with truncated wings at a temperature of 37° C 98.6° F the rate increased to 133,080 beats/min. The muscular contraction-expansion cycle in 0.00045 or 1/2218th of a sec, further represents the fastest muscle movement ever measured.

Slowest wing beat

The slowest wing beat of any insect is 300 a min by the swallow-tail butterfly (*Papilio machaon*). Most butterflies beat their wings at a rate of 460-636 a min.

Hive record

The greatest reported amount of wild honey ever extracted from a single hive is 404 lb 183,2 kg recorded by Ormond R. Aeby of Santa Cruz, California on 29 Aug 1974.

Bush-cricket Largest

The bush-cricket with the largest wing span is the New Guinean grasshopper *Silicofera grandis* with female examples measuring more than 10 in 254 mm. *Pseudophyllanax imperialis*, found on the island of New Caledonia in the south-western Pacific, has antennae measuring up to 8 in 203 mm. The largest bush-cricket found in Britain is *Tettigonia viridissima*, which normally has a body length of 1¼ in 31,8 mm. In August 1953 a female measuring 77 mm 3.03 in in body length (including ovipositor) was caught in a sand pit at Grays, Essex and later presented to the London Zoological Gardens. The largest of the 14 true grasshoppers found in Britain is *Mecostethus grossus*, females of which measure up to 39 mm 1.53 in in body length.

Dragonflies Largest

The largest dragonfly in the world is *Megaloptera carolinensis* of Central and South America, which has been measured up to 191 mm 7.52 in across the wings and 120 mm 4.72 in in body length. The largest dragonfly found in Britain is *Anax imperator*, which has a wing span measurement of up to 106 mm 4.17 in. The smallest British dragonfly is *Lestes dryas*, which has a wing span of 20–25 mm 0.78–0.98 in.

Flea Largest

The largest known flea is *Hystrichopsylla schefferi schefferi*, which was described from a single specimen taken from the nest of a Mountain beaver (*Aplodontia rufa*) at Puyallup, Washington, USA in 1913. Females measure up to 8 mm 0.31 in in length which is the diameter of a pencil. The largest flea (61 species) found in Britain is the Mole and Vole flea (*H. talpae*), females of which have been measured up to 6 mm 0.23 in.

Flea Longest jump

The champion jumper among fleas is the common flea (*Pulex irritans*). In one American experiment carried out in 1910 a specimen allowed to leap at will performed a long jump of 13 in 330 mm and a high jump of $7\frac{3}{4}$ in 197 mm. In jumping 130 times its own height a flea subjects itself to a force of 200 g. Siphonapterologists recognise 1830 varieties.

The Common Flea's prowess as a long jumper (13 in 330 mm) and a high jumper ($7\frac{3}{4}$ in 197 mm) is exactly as plotted on these two pages. If humans were proportionately as athletic, the world and Olympic high jump records would be 853 ft 260 m—equivalent to jumping from street level onto the roof of the 70 storey RCA building in New York City.

10. CENTIPEDES (*Chilopoda*)

Longest

The longest known species of centipede is a large variant of the widely distributed *Scolopendra morsitans*, found on the Andaman Islands, Bay of Bengal. Specimens have been measured up to 13 in 330 mm in length and $1\frac{1}{2}$ in 38 mm in breadth. The longest centipede found in Britain is *Haplophilus subterraneus*, which measures up to 70 mm 2.75 in in length and 1.4 mm 0.05 in across the body, but on 1 Nov 1973 Mr Ian Howgate claims to have seen a thin amber-coloured specimen in St Albans, Herts, measuring at least $4\frac{1}{2}$ in 114 mm.

Shortest

The shortest recorded centipede is an unidentified species which measures only 5 mm 0.19 in. The shortest centipede found in Britain is *Lithobius dubosequi*, which measures up to 9.5 mm 0.374 in in length and 1.1 mm 0.043 in across the body.

Most legs

The centipede with the greatest number of legs is *Himantarium gabrielis* of southern Europe which has 171–177 pairs when adult.

Fastest

The fastest centipede is probably *Scutigera coleoptrata* of southern Europe which can travel at a rate of 50 cm 19.68 in a sec or 1.1 mph 1.8 km/h.

11. MILLIPEDES (*Diplopoda*)

Longest

The longest known species of millipede are *Graphidostreptus gigas* of Africa and *Scaphistostreptus seychellarum* of the Seychelles in the Indian Ocean, both of which have been measured up to 280 mm 11.02 in in length and 20 mm 0.78 in in diameter. The longest millipede found in Britain is *Cylindroiulus londinensis* which measures up to 50 mm 1.96 in.

Shortest

The shortest millipede in the world is the British species *Polyxenus lagurus*, which measures 2,1–4,0 mm 0.082–0.15 in in length.

Most legs

The greatest number of legs reported for a millipede is 355 pairs (710 legs) for an unidentified South African species.

12. SEGMENTED WORMS (*Annelida*)

Longest

The longest known species of giant earthworm is *Microchaetus*



A greatly enlarged Common flea. (*Pulex irritans*)

rappi (= *M. microchaetus*)

of South Africa. An average-sized specimen measures 136 cm 4 ft 6 in in length (65 cm 25½ in when contracted), but much larger examples have been reliably reported. In c. 1937 a giant earthworm measuring 22 ft 6,70 m in length when naturally extended and 20 mm 0.78 in in diameter was collected in the Transvaal, and in November 1967 another specimen measuring 11 ft 3,35 m in length and 21 ft 6,40 m when naturally extended was found reaching over the national road (width 6 m 19 ft 8½ in) near Debe Nek, eastern Cape Province. The longest segmented worm found in Britain is the King rag worm (*Nereis virens*). On 19 Oct 1975 a specimen measuring 44 in 111,7 cm when fully extended was collected by Mr James Sawyer in Hauxley Bay, Northumberland.

Shortest

The shortest known segmented worm is *Chaetogaster annandalei*, which measures less than 0,5 mm 0.019 in in length.

13. MOLLUSCS (*Mollusca*)

(Squids, octopuses, shellfish, snails, etc.)

Largest squid

The largest known invertebrate is the Atlantic giant squid *Architeuthis dux*. On 2 Nov 1878 a specimen measuring 55 ft 16,75 m in total length (head and body 20 ft 6,09 m, tentacles 35 ft 10,66 m) was killed after it ran aground in Thimble Tickle Bay, Newfoundland, Canada. It weighed an estimated 2 tons/tonnes. In Oct 1887 another giant squid (*Architeuthis longimanus*) measuring 57 ft 17,37 m in total length was washed up in Lyall Bay, New Zealand, but 49 ft 14,93 m of this was tentacle. The largest squid ever recorded in British waters was an *Architeuthis monachus* found at the head of Whalefirth Voe, Shetland on 2 Oct 1959 which measured 24 ft 7,31 m in total length.

Largest octopus

The largest octopus known to science is *Octopus apollyon* of the coastal waters of the North Pacific which regularly exceeds 12 ft 3,7 m in radial spread and 55 lb 25 kg in weight. One huge individual caught single-handed by skin-diver Donald E. Hagen in Lower Hoods Canal, Puget Sound, Washington, USA on 18 Feb 1973 had a relaxed radial spread of 23 ft 7,01 m and weighed 118 lb 10 oz 53,8 kg. In November 1896 the remains of an unknown animal weighing an estimated 6–7 tons/tonnes were found on a beach near St Augustine, Florida, USA. Tissue samples were later sent to the US National Museum in Washington, DC, and in 1970 they were positively identified as belonging to a giant form of octopus (*Octopus giganteus*). Some experts, however, do not agree with this assessment because there was no evidence of tentacles or a beak and believe the decomposing carcass was more probably that of a large whale or shark. The largest octopus found in British waters is the Common octopus (*Octopus vulgaris*), which has been measured up to 7 ft 2,13 m in radial spread and may weigh more than 10 lb 4,5 kg.

Longest lived mollusc

The longest lived mollusc is the Quahog (*Venus mercenaria*) a thick-shelled clam found in the North Atlantic. Recent research in America involving the study of microscopic rings laid down annually on the tooth holding the shells together indicates that this species sometimes lives for 150 years.

SHELLS

Largest

The largest of all existing bivalve shells is the marine Giant clam *Tridacna gigas*, which is found on the Indo-Pacific coral reefs. A specimen measuring 43 in 109,2 cm by 29 in 73,6 cm and weigh-

ing 579½ lb 262,9 kg (over a quarter of a ton) was collected from the Great Barrier Reef in 1917, and is now preserved in the American Museum of Natural History, New York City, NY, USA. Another lighter specimen was measured to be 137 cm 53.9 in overall. The largest bivalve shell found in British waters is the Fan mussel (*Perna fragilis*). One specimen found at Tor Bay, Devon measured 37 cm 14.56 in in length and 20 cm 7.87 in in breadth at the hind end.

Smallest

The smallest bivalve shell found in British waters is the coin-shell *Neolepton sykesi*, which has an average length of 1,2 mm 0.047 in. This species is only known from a few examples collected off Guernsey, Channel Islands and West Ireland. The smallest British shell is the univalve *Ammonicera rota*, which measures 0,5 mm 0.02 in in diameter.

Most Expensive shell

A sum of \$10,000 (then £5,000) was refused by Phillip Clover of Glen Ellen, California for a *Conus servus* in 1978.

GASTROPODS

Largest

The largest known gastropod is the Trumpet or Baler conch (*Syrinx aruanus*) of Australia. One outsized specimen collected off Western Australia in 1979 and now owned by Don Pisor of San Diego, California, USA measures 77,2 cm 30.39 in in length and has a maximum girth of 100 cm 39.37 in. It weighed nearly 40 lb 18,14 kg when alive.

The largest known land gastropod is the African giant snail (*Achatina* sp.). An outsized specimen 'Gee Geronimo' found by Christopher Hudson (1955–79) of Hove, E. Sussex, measured 15½ in 39,3 cm from snout to tail, (shell length 10¾ in 27,3 cm) in December 1978 and weighed exactly 2 lb 900 g. The snail was collected in Sierra Leone in June 1976 where shell lengths up to 14 in 35,5 cm have been reliably reported.

The largest land snail found in Britain is the Roman or Edible snail (*Helix pomatia*), which measures up to 4 in 10 cm in overall length and weighs up to 3 oz 85 g. The smallest British land snail is *Punctum pygmaeum*, which has a shell measuring 0.023–0.035 in 0,6–0,9 mm by 0.047–0.059 in 1,2–1,5 mm.

Speed

The fastest-moving species of land snail is probably the common garden snail (*Helix aspersa*). According to tests carried out in the United States of America absolute top speed for *Helix aspersa* is 0.0313 mph 0,05 km/h (or 55 yd 50,3 m per hr) while some species are at full stretch at 0.00036 mph 0,0005 km/h (or 23 in 58 cm per hr). The snail-racing equivalent of a 4-minute mile is 24 inches in 3 minutes or the 7920 minute or 5½-day mile. This was recorded by Colly in 1970.

14. RIBBON WORMS (*Nemertina*)

Longest

The longest of the 550 recorded species of ribbon worms, also called nemertines (or nemerteans), is the 'Boot-lace worm' (*Lineus longissimus*), which is found in the shallow waters of the North Sea. A specimen washed ashore at St Andrews, Fife, Scotland in 1864 after a severe storm measured more than 180 ft 55 m in length, making it easily the longest recorded worm of any variety.

15. JELLYFISHES (*Scyphozoa*)

Largest and smallest

The largest jellyfish is the Arctic giant jellyfish (*Cyanea capillata*

species) of the north-western Atlantic. One specimen washed up in Massachusetts Bay had a bell diameter of 7 ft 6 in 2.28 m and tentacles stretching 120 ft 36.5 m. The largest cnidarian found in British waters is the rare 'Lion's mane' jellyfish (*Cyanea capillata*), also known as the Common sea blubber. One specimen measured at St Andrew's Marine Laboratory, Fife, Scotland had a bell diameter of 91 cm 35.8 in and tentacles stretching over 13.7 m 45 ft. Some true jellyfishes have a bell diameter of less than 20 mm 0.78 in.

Most venomous

The most venomous cnidarian is the Australian sea wasp (*Chironex fleckeri*) which carries a cardio-toxic venom similar in strength to that found in the Asiatic cobra. These box jellyfish have caused the deaths of 66 people off the coast of Queensland, Australia since 1880. Victims die within 1–3 min if medical aid is not available. A most effective defence is women's panty hose, outside versions of which are now worn by Queensland lifeguards at surf carnivals.

16. SPONGES (*Porifera*)

Largest

The largest known sponge is the barrel-shaped Loggerhead sponge (*Spherospongia vesparium*) of the West Indies and the waters off Florida, USA. Single individuals measure up to 3 ft 6 in 105 cm in height and 3 ft 91 cm in diameter. Neptune's cup or goblet (*Potamon patera*) of Indonesia grows to 4 ft 120 cm in height, but it is a less bulky animal. In 1909 a Wool sponge (*Hippopongia canaliculata*) measuring 6 ft 183 cm in circumference was collected off the Bahama Islands. When first taken from the water it weighed between 80 and 90 lb 36 and 41 kg but after it had been dried and relieved of all excrescences it scaled 12 lb 5.44 kg (this sponge is now preserved in the US National Museum, Washington, DC, USA).

Smallest

The smallest known sponge is the widely distributed *Leucosolenia blanca*, which measures 3 mm 0.11 in in height when fully grown.

Deepest

Sponges have been recovered from depths of up to 18,500 ft 5637 m.

17. EXTINCT ANIMALS

Longest World

The longest dinosaur so far recorded is *Diplodocus* ('double-beam'), an attenuated titanosaurid which ranged over Western North America about 150 million years ago. A composite reconstruction in the Carnegie Museum of Natural History in Pittsburgh, Pennsylvania measures 87 ft 6 in 26.6 m in total length—head and neck 22 ft 6.7 m; body 15 ft 4.5 m; tail 50 ft 15.4 m—and has a mounted height of 11 ft 9 in 3.5 m at the pelvis (the highest point on the body).

Longest Britain

In 1975 an amateur fossil-hunter working on the cliff-face near Brightstone, Isle of Wight, uncovered an unusual 228 mm 9 in long bone which was later identified as the heamal arch (a bone running beneath the vertebrae of the tail) of a *Diplodocus*-type sauropod.

Heaviest World

The heaviest land vertebrates of all time were the massive brachiosaurs ('arm lizards') of the Late Jurassic (135–165 million years ago) of East Africa, the Sahara, Portugal and the south-western USA. A complete skeleton excavated by a German expedition at the famous Tendaguru site, southern Tanganyika (Tanzania) between 1909 and 1911 and now mounted in the Humboldt Museum für Naturkunde, East Berlin measures 74 ft 22.7 m in total length (height at shoulder 21 ft 6.4 m) and had a raised head height of 39 ft 11.8 m. *Brachiosaurus brancai*, as it was named, weighed a computed 78.26 tonnes 77 tons in life.

In the summer of 1972 the remains of another enormous brachiosaurid new to science, were discovered in the Dry Mesa Quarry on the Uncompaggre Plateau, western Colorado, USA. From the evidence of the bones already collected, including 8 ft 2.43 m long matching shoulder blades, 'Supersaurus', as it has been nicknamed, is about 22 per cent larger than *Brachiosaurus*: this presupposes an overall length of c. 90 ft 27.4 m, a shoulder height of 26 ft 7.9 m and a raised head height of nearly 50 ft 15.2 m if it is built on the same anatomical lines. The weight of such an animal, based on the cube of the fossil dimensions, would be c. 140 tonnes 138 tons. In 1979 another shoulder blade measuring 8 ft 10 in 2.69 m in length was discovered in the same quarry.

Heaviest Britain

Britain's heaviest land vertebrate was the sauropod *Cetiosaurus oxoniensis* ('whale lizard'), which roamed across southern England about 150 million years ago. It measured up to 68 ft 6 in 20.88 m in total length and probably weighed at least 30 tons/tonnes.

Largest land predator

The largest of the flesh-eating dinosaurs was probably the 6¾ tons/tonnes *Tyrannosaurus rex* ('king tyrant lizard') which stalked over what are now the states of Montana and Wyoming in the USA about 75,000,000 years ago. No complete skeleton of this dinosaur has ever been discovered, but a composite individual has a bipedal height of 18 ft 5.5 m, and measures 40 ft 12.19 m in overall length. *Tarbosaurus efremovi*, its Mongolian counterpart, was also about the same size (total length 42 ft 12.8 m), but although it had a longer skull than *Tyrannosaurus* its head was less massive and it may have lost out in terms of overall bulk. In 1934 the skeleton of a huge *Antrodemus* (= *Allosaurus*) with a much heavier body in proportion to its height than the tyrannosaurids was excavated near Kenton, Oklahoma, USA. This carnosaur had a bipedal height of 16 ft 4.87 m and measured 42 ft 12.8 m in overall length.

Most brainless

Stegosaurus ('plated reptile'), which measured up to 30 ft 9 m in total length had a walnut-sized brain weighing only 2½ oz 70 g, which represented 0.004 of 1 per cent of its computed body weight of 1¾ ton/tonne (cf. 0.074 of 1 per cent for an elephant and 1.88 per cent for a human). It roamed widely across the Northern Hemisphere about 150,000,000 years ago.

Largest dinosaur eggs

The largest known dinosaur eggs are those of *Hypselosaurus priscus*, a 30 ft 9.14 m long sauropod which lived about 80,000,000 years ago. Some specimens found in the valley of the Durance near Aix-en-Provence southern France in October 1961 would have had, uncrushed, a length of 12 in 300 mm and a diameter of 10 in 255 mm.

Largest flying creature

The largest flying creature is the pterosaur *Quetzalcoatlus northropi* which glided over what is now the state of Texas, USA about 65 million years ago. Partial remains discovered in Big Bend National Park, West Texas in 1971 indicate that this reptile must have had a wing span of 11–12 m 36–39 ft and weighed about 190 lb 86 kg.

Largest marine reptile

The largest marine reptile ever recorded was *Stretosaurus macromerus*, a short-necked pliosaur from the Kimmeridge Clay of Stretham, Cambridgeshire and Oxfordshire. A mandible found at Cumnor, Oxfordshire and now in the University Museum, Oxford has a restored length of over 3 m 9 ft 10 in and must have belonged to a reptile measuring at least 46 ft 14 m in total length. *Kronosaurus queenslandicus*, another pliosaur, was also of comparable size, and a complete skeleton in the Museum of Comparative Zoology at Harvard University, Cambridge, Massachusetts, USA measures 42 ft 12.8 m in total length.

Largest crocodile

The largest known crocodile was *Deinosuchus riograndensis*, which lived in the lakes and swamps of what is now the state of Texas, USA about 75,000,000 years ago. Fragmentary remains discovered in Big Bend National Park, West Texas, indicate it

must have measured at least 16 m 52 ft 6 in in total length. The huge gaurial *Rhinopeltis*, which lived in what is now northern India about 2,000,000 years ago, was even longer reaching 60 ft 18.3 m, but it was not so heavily built.

Largest chelonians

The largest prehistoric chelonian was *Stupendemys geographicus*, a pelomedusid turtle which lived about 5,000,000 years ago. Fossil remains discovered by a Harvard University paleontological expedition in Northern Venezuela in 1972 indicate that this turtle had a carapace (shell) measuring 218–230 cm 7 ft 2 in–7 ft 6½ in in mid-line length and probably measured at least 12 ft 3.65 m in overall length. It had a computed weight of 4500 lb 2041 kg in life.

Largest tortoise

The largest prehistoric tortoise was probably *Geochelone* (= *Colossochelys*) *atlas*, which lived in what is now northern India, Burma, Java, the Celebes and Timor about 2 million years ago. In 1923 the fossil remains of a specimen with a carapace 5 ft 11 in 180 cm long (7 ft 4 in 223 cm over the curve) and 2 ft 11 in 89 cm high were discovered near Chandigarh in the Siwalik Hills. This animal had a total length of 8 ft 2.44 m and is computed to have weighed 2100 lb 852 kg when it was alive. Recently the fossil remains of other giant tortoises (*Geochelone*) have been found in Florida and Texas, USA.

Longest snake

The longest prehistoric snake was the python-like *Gigantophis garstini*, which inhabited what is now Egypt about 55,000,000 years ago. Parts of a spinal column and a small piece of jaw discovered at Fayum in the Western Desert indicate a length of c. 37 ft 11 m. Another fossil giant snake, *Madtsoia bai* from Patagonia, S. America, measured c. 10 m 33 ft in length, comparable with the longest constrictors living today.

Largest amphibian

The largest amphibian ever recorded was the gharial-like *Prionosuchus plummeri* which lived 230,000,000 years ago. In 1972 the fragmented remains of a specimen measuring an estimated 9 m 30 ft in life, were discovered in North Brazil.

Largest fish

No prehistoric fish larger than living species has yet been discovered. The claim that the Great shark (*Carcharodon megalodon*), which abounded in Miocene seas some 15,000,000 years ago, measured 80 ft 24 m in length, based on ratios from fossil teeth has now been shown to be in error. The modern estimate is that this shark did not exceed 43 ft 13.1 m.

Largest insect

The largest prehistoric insect was the dragonfly *Meganeura monyi*, which lived about 280,000,000 years ago. Fossil remains (i.e. impressions of wings) discovered at Commentry, central France, indicate that it had a wing expanse of up to 70 cm 27.5 in.

Britain's largest dragonfly was *Typus* sp. (family *Meganeuridae*),

which is only known from a wing impression found on a lump of coal in Bolsover colliery, Derbyshire in July 1978. It had an estimated wing span of 50–60 cm 19.68–23.62 in and lived about 300,000,000 years ago, making it the oldest flying creature so far recorded.

Most southerly

The most southerly creature yet found is a freshwater salamander-like amphibian *Labyrinthodont*, represented by a 2½ in 63.5 mm piece of jawbone found near Beardmore Glacier Antarctica, 325 miles 532 km from the South Pole, dating from the early Jurassic of 200,000,000 years ago. This discovery was made in December 1967.

Largest bird

The largest prehistoric bird was the flightless *Dromornis stirtoni*, a huge emu-like creature which lived in central Australia 11,000,000 years ago. Fossil leg bones found near Alice Springs in 1974 indicate that the bird must have stood c. 10 ft 3 m in height and weighed c. 1100 lb 500 kg. The giant moa *Dinornis maximus* of New Zealand was even taller, attaining a maximum height of 12 ft 3.6 m but it only weighed about 500 lb 227 kg.

The largest known flying bird was the giant teratorn *Argentavis magnificens* which lived in Argentina about 6 million years ago. Fossil remains discovered at a site 100 miles 160 km west of Buenos Aires in 1979 indicate that this gigantic vulture had a wing span of 7.0–7.6 m 23–25 ft and weighed about 120 kg 265 lb.

Largest mammals

The largest land mammal ever recorded was *Baluchitherium* (= *Indricotherium*, *Pristinotherium* and *Benaratherium*), a long-necked hornless rhinoceros which roamed across western Asia and Europe (Yugoslavia) about 35 million years ago. A restoration in the American Museum of Natural History, New York measures 17 ft 9 in 5.41 m to the top of the shoulder hump and 37 ft 11.27 m in total length, and this particular specimen must have weighed about 30 tonnes/tons in the flesh. The bones of this gigantic browser were first discovered in the Bugti Hills in east Baluchistan, Pakistan in 1907–08.

The largest marine mammal was the serpentine *Basilosaurus* (*Zeuglodon*) *cetoides*, which swam in the seas over what are now the American states of Arkansas and Alabama 50 million years ago. It measured up to 70 ft 21.3 m in length.

Largest mammoth

The largest prehistoric elephant was the Steppe mammoth *Mammuthus* (*Parelephas*) *trogotherii*, which roamed over what is now central Europe a million years ago. A fragmentary skeleton found in Mosbach, West Germany indicates a shoulder height of 4.5 m 14 ft 9 in.

Tusks Longest

The longest tusks of any prehistoric animal were those of the straight-tusked elephant *Palaeoloxodon antiquus germanicus*, which lived in northern Germany about 300,000 years ago. The average length in adult bulls was 5 m 16 ft 5 in. A single tusk of a

EARLIEST OF THEIR TYPES

Type	Scientific name and year of discovery	Location	Estimated years before present
Ape	Unnamed species (May 1979)	Padaung Hills, Burma	40,000,000
Primate	Tarsier-like	Indonesia	70,000,000
	Lemur	Madagascar	70,000,000
Social insect	<i>Sphecomyrma freyi</i> (1967)	New Jersey, USA	110,000,000
Bird	<i>Archaeopteryx lithographica</i> (1861)	Bavaria, W. Germany	150,000,000
Mammal	<i>Megazostrodon</i> (1966)	Thaba-ca-Litau, Lesotho	190,000,000
Reptiles	<i>Hylonomus</i> , <i>Archerpeton</i> , <i>Proctolepsyrops Romericus</i>	all in Nova Scotia	290,000,000
Amphibian	<i>Ichthyostega</i> (first quadruped)	Greenland	350,000,000
Spider	<i>Palaeostenzia crassipes</i>	Tayside, Scotland	370,000,000
Insect	<i>Rhyniella procursor</i>	Tayside, Scotland	370,000,000
Vertebrates (Fish scales)	<i>Anatolepis</i>	Crook County, Wyoming, USA	510,000,000
Crustacean	<i>Karagassima</i> (12 legged)	Sayan Mts, USSR	c. 650,000,000
Metazoans	Bore hole tracks	Zambia	1,000,000,000

woolly mammoth (*Mammuthus primigenius*) preserved in the Franzos Museum at Brno, Czechoslovakia measures 5.02 m (16 ft 5 in) along the outside curve. In c. August 1933, a single tusk of an Imperial mammoth (*Mammuthus imperator*) measuring 16+ ft 4.87+ m (anterior end missing) was unearthed near Post, Garza County, Texas, USA. In 1934 this tusk was presented to the American Museum of Natural History in New York City, NY, USA.

Tusks Harriet

The heaviest single fossil tusk on record is one weighing 150 kg (330 lb) with a maximum circumference of 35 in 89 cm now preserved in the Museo Civico di Storia Naturale, Milan, Italy. The specimen (in two pieces) measures 11 ft 9 in 3.58 m in length. The heaviest recorded fossil tusks are a pair belonging to a 13 ft 4 in 4.06 m tall Columbian mammoth (*Mammuthus columbi*) in the State Museum, Lincoln, Nebraska, USA which have a combined weight of 498 lb 226 kg and measure 13 ft 9 in 4.21 m and 13 ft 7 in 4.14 m respectively. They were found near Campbell, Nebraska in April 1915.

Antlers Greatest Span

The prehistoric Giant deer (*Megaceros giganteus*), which lived in northern Europe and northern Asia as recently as 50,000 BC, had the longest horns of any known animal. One specimen recovered from an Irish bog had greatly palmated antlers measuring 14 ft 4.3 m across.

PLANT KINGDOM (*Plantae*)

PLANTS

Oldest Living Thing

'King Clone', the oldest known clone of the creosote plant (*Larrea tridentata*) found in south west California, was estimated in February 1980 by Prof. Frank C. Vasek to be 11,700 years old.

Extinct

Plants thought to be extinct are rediscovered each year and there are thus many plants of which specimens are known in but a single locality. The small pink blossoms of *Presidio manzanita* survive in a single specimen reported in June 1978 at an undisclosed site in California. The only known location of the adder's-tongue spearwort (*Ranunculus ophioglossifolius*) in the British Isles is the Badgeworth Nature Reserve, Gloucestershire. Only two of the 5 flowers from Britain's last known colony of ghost orchids (*Epipogium aphyllum*) survived in 1980 in the north west home counties. *Penmanitia baylisiana*, a tree found in 1945 on Three Kings Island, off New Zealand, only exists as a female and cannot fruit.

Northernmost

The yellow poppy (*Papaver radicatum*) and the Arctic willow (*Salix arctica*) survive, the latter in an extremely stunted form, on the northernmost land (83° N).

Southernmost

Lichens resembling *Rhinodina frigida* have been found in Mawate Canyon in 86° 09' S 157° 30' W in 1971 and in the Horlick Mountain area, Antarctica in 86° 09' S 131° 14' W in 1965. The southernmost recorded flowering plant is the carnation (*Calceolarius crassifolius*), which was found in latitude 67° 15' S on Jenny Island, Margaret Bay, Graham Land (Palmer Peninsula), Antarctica.

Height

The greatest certain altitude at which any flowering plants have been found is 21,000 ft 6400 m on Kamet (25,447 ft 7756 m) by N. D. Jeyal in 1955. They were *Ermanita himalayensis* and *Ranunculus lobatus*.

Depth

The greatest reported depth to which roots have penetrated is a calculated 400 ft 120 m in the case of a wild fig tree at Echo Caves, near Orlingstad, East Transvaal, South Africa. An elm tree root of at least 360 ft 110 m was reported from Auchencraig, Largo, Strathclyde c. 1950.

A single winter rye plant (*Sesale cereale*) has been shown to produce 387 miles 622.8 km of roots in 1.83 ft³ 0.051 m³ of earth.

Worst weeds

The most intransigent weed is the mat-forming water weed *Salvinia auriculata*, found in Africa. It was detected on the filling of Kariba Lake in May 1959 and within 11 months had choked an area of 77 miles² 199 km² rising by 1963 to 387 miles² 1002 km². The world's worst land weeds are regarded as purple nut sedge, Bermuda grass, barnyard grass, jungle-rice, goose grass, Johnson grass, Guinea grass, cogon grass and lantana. The most damaging and widespread cereal weeds in Britain are the wild oats *Avena fatua* and *A. ludoviciana*. Their seeds can withstand temperatures of 240° F 115,6° C for 15 min and remain viable.

Most spreading plant

The greatest area covered by a single clonal growth is that of the wild box huckleberry (*Gaylussacia brachyera*), a mat-forming evergreen shrub first reported in 1796. A colony covering 8 acres, 3.2 hectares was discovered in 1845 near New Bloomfield, Pennsylvania. Another colony, covering about 100 acres, was 'discovered' on 18 July 1920 near the Juniata River, Pennsylvania. It has been estimated that this colony began 13,000 years ago.

Longest Philodendron

A Philodendron, 552 ft 168.2 m in length (mid-April 1982), now grows in the home of Mr M. J. Linhart in Thornton, Leicestershire.

Largest aspidistra

The aspidistra (*Aspidistra elatior*) was introduced to Britain as a parlour palm from Japan and China in 1822. The biggest aspidistra in Britain is one 50 in 127 cm tall with more than 500 leaves spanning 5 ft 1.52 m grown by Gertie James in Staveley, Chesterfield.

Earliest flower

The oldest fossil of a flowering plant with palm-like imprints was found in Colorado, USA, in 1953 and dated about 65,000,000 years old.

Largest cactus

The largest of all cacti is the saguaro (*Cereus giganteus* or *Carnegiea gigantea*), found in Arizona, south-eastern California, USA and Sonora, Mexico. The green fluted column is surmounted by candelabra-like branches rising to a height of 16,00 m 52 ft 6 in in the case of a specimen measured on the boundary of the Saguaro National Monument, Arizona. They have waxy white blooms which are followed by edible crimson fruit. An armless cactus 78 ft 24 m in height was measured in April 1978 by Hube Yates in Cave Creek, Arizona.

Tallest hedge World

The world's tallest hedge is the Meikleour beech hedge in Perthshire, Scotland. It was planted in 1746 and has now attained a trimmed height of 85 ft 26 m. It is 600 yd 550 m long. Some of its trees now exceed 100 ft 30.5 m.

Tallest hedge Yew

The tallest yew hedge in the world is in Earl Bathurst's Park, Cirencester, Gloucestershire. It was planted in 1720, runs for 170 yd 155 m, reaches 36 ft 11 m, is 15 ft 4.5 m thick at its base and takes 20 man-days to trim.

Tallest hedge Box

The tallest box hedge is 35 ft 10.7 m in height at Birr Castle, Offaly, Ireland dating from the 18th century.

Mosses

The smallest of mosses is the pygmy moss (*Ephemerum*) and the longest is the brook moss (*Fontinalis*), which forms streamers up to 3 ft 91 cm long in flowing water.

Longest seaweed

Claims made that seaweed off Tierra del Fuego, South America, grows to 600 ft 182.5 m and even to 1000 ft 305 m in length have gained currency. More recent and more reliable records indicate that the longest species of seaweed is the Pacific giant kelp



Left: The mightiest of all cacti, the 50 ft 16 m tall Saguaro cactus which commonly grows in the Sonoran Desert of Arizona, USA (see p. 52). (Heather Angel)

below: The delicate Ghost orchid flowering in an undisclosed Chiltern beechwood. Only two flowers were sighted in 1980 (see p. 52). (Heather Angel)

(*Macrocystis pyrifera*), which does not exceed 196 ft 60 m in length. It can grow 45 cm 18 in in a day. The longest of the 700 species of British seaweed is the brown seaweed *Chorda filum* which grows up to a length of 20 ft 6,10 m. The Japanese *Sargassum muticum* introduced c. 1970 can grow to 30 ft 9,0 m.

Largest vines

The largest recorded grape vine was one planted in 1842 at Carpinteria, California, USA. By 1900 it was yielding more than 9 tons/tonnes of grapes in some years, and averaging 7 tons/tonnes per year. It died in 1920. Britain's largest vine (1898–1964) was at Kippen, Stirling with a girth, measured in 1956, of 5 ft 1,52 m. England's largest vine is the Great Vine, planted in 1768 at Hampton Court, Greater London. Its girth is 85 in 215,9 cm with branches up to 114 ft 34,7 m long and an average yield of 703 lb 318,8 kg. A yield of 46 kg 101,4 lb was recorded at The White Lodge, Linton, Kent from an outdoor vine in 1979 with a yield of 77 bottles.

Most northerly and southerly vineyards

A vineyard at Sabile, Latvia, USSR is just north of Lat. 57° N. The most northerly commercial vineyard in Britain is that at Renishaw Hall, Derbyshire with 2,600 vines. It lies in Lat. 53° 18' N. The most southerly commercial vineyard is operated by Moorilla Estates Pty Ltd at Berridale, Tasmania in Lat. 42° 47' S.

BLOOMS AND FLOWERS

Largest bloom World

The mottled orange-brown and white parasitic stinking corpse lily (*Rafflesia arnoldii*) has the largest of all blooms. These attach themselves to the cissus vines of the jungle in south-east Asia and measure up to 3 ft 91 cm across and ¾ inch 1,9 cm thick, and attain a weight of 15 lb 7 kg. The spathe and spadix of the less massive green and purple flower of *Amorphophallus titanum* of Sumatra may attain a length of more than 1,5 m 5 ft.

The largest known inflorescence is that of *Puya raimondii*, a rare Bolivian plant with an erect panicle (diameter 8 ft 2,4 m) which emerges to a height of 35 ft 10,7 m. Each of these bears up to 8000 white blooms (see also Slowest-flowering plant p. 54). The flower-spike of an agave was in 1974 measured to be 52 ft 15,8 m long in Berkeley, California.

The world's largest blossoming plant is the giant Chinese wisteria at Sierra Madre, California, USA. It was planted in 1892 and now has branches 500 ft 152 m long. It covers nearly an acre, weighs 225 tons 228 tonnes and has an estimated 1,500,000 blossoms during its blossoming period of five weeks, when up to 30,000 people pay admission to visit it. In November 1974 a Passion plant, fed by a hormone by Dennis and Patti Carlson, was reported to have grown to a length of 600 ft 182 m at Blaine, Minnesota, USA.

Largest bloom Great Britain

The largest bloom of any indigenous British flowering plant is



that of the wild white water lily (*Nymphaea alba*), which measures 6 in 15 cm across. Other species bear much larger inflorescences.

Smallest flower

The floating flowering aquatic duckweed *Wolffia punctata* has fronds only 1/35 of an inch 0,7 mm in length. The 'flower' of a single stamen (male) or single pistil (female) is only 1/80 × 1/160th of an inch 0,3 × 0,15 mm. The smallest land plant regularly flowering in Britain is the chaffweed (*Cetunculus minimus*), a single seed of which weighs 0.00003 of a gramme.

Smallest plant

The smallest plant is a uni-cellular alga and is listed under Protista smallest (see p. 58).

Most valuable

The Burpee Co \$10,000 prize offered in 1954 for the first all-white marigold was won on 12 Aug 1975 by Alice Vonk of Sully, Iowa, USA.

Fastest growth

The case of a *Hesperogucca whipplei* of the family Liliaceae growing 12 ft 3,65 m in 14 days was reported from Treco Abbey, Isles of Scilly in July 1978.



Slowest flowering plant

The slowest flowering of all plants is the rare *Puya raimondii*, the largest of all herbs, discovered in Bolivia in 1870. The panicle emerges after about 150 years of the plant's life. It then dies. (See also above under Largest blooms.) Some agaves, erroneously called Century plants, first flower after 40 years.

Largest wreath

The largest wreath constructed was the wreath built by the Geneva Kiwanis Club, NY, USA during November 1981. It measured 54 ft 6½ in 16,62 m in diameter and weighed a total of 4 tons.

Longest daisy chain

The longest daisy chain, made in 7 hr, was one of 4529 ft 6 in 1380,5 m at the Museum of Childhood, Sudbury, Derbyshire on 6 June 1981. The team is limited to 16.

Orchid Largest

The largest of all orchids is *Grammatophyllum speciosum*, native to Malaysia. Specimens have been recorded up to 25 ft 7,62 m in

The outside 17 lb 7,71 kg pineapple picked in 1978 in Malindi, Kenya (see p. 55).



height. The largest orchid flower is that of *Phragmipedium caudatum*, found in tropical areas of America. Its petals are up to 18 in 46 cm long, giving it a maximum outstretched diameter of 3 ft 91 cm. The flower is, however, much less bulky than that of the stinking corpse lily.

Orchid Tallest

The tallest free-standing orchid is *Grammatophyllum speciosum* (see above). *Galeola foliata* may attain 49 ft 15 m on decaying rainforest trees in Queensland, Australia.

Orchid Smallest

The smallest orchid is *Bulbophyllum minutissimum*, found in Australia. Claims have also been made for *Notylia norae* found in Venezuela. The smallest orchid flowers are borne by *Stelis graminea*, being less than 1 mm 0.04 in long.

Orchid Highest priced

The highest price ever paid for an orchid is 1150 guineas (£1,207.50), paid by Baron Schröder to Sanders of St Albans for an *Odontoglossum crispum* (variety *pitianum*) at an auction by Protheroe & Morris of Bow Lane, London, on 22 Mar 1906. A Cymbidium orchid called Rosanna Pinkie was sold in the United States for \$4500 (then £1600) in 1952.

Largest rhododendron

The largest species of rhododendron is the scarlet *Rhododendron arboreum*, examples of which reach a height of 60 ft 18,25 m at Mangalbaré, Nepal. The cross-section of the trunk of a *Rhododendron giganteum*, reputedly 90 ft 27,43 m high from Yunnan, China is preserved at Inverewe Garden, Highland. The largest in the United Kingdom is one 25 ft 7,60 m tall and 272 ft 82,90 m in circumference at Government House, Hillsborough, Co. Down. A specimen 35 ft 10,65 m high and 3 ft 3 in in circumference has been measured at Tregothan, Truro, Cornwall.

Largest rose tree

A 'Lady Banks' rose tree at Tombstone, Arizona, USA, has a trunk 40 in 101 cm thick, stands 9 ft 2,74 m high and covers an area of 5,380 ft² 499 m² supported by 68 posts and several thousand feet of piping. This enables 150 people to be seated under the arbour. The cutting came from Scotland in 1884.

FRUITS AND VEGETABLES

Most and least nutritive

An analysis of the 38 commonly eaten raw (as opposed to dried) fruits shows that the one with the highest caloric value is avocado (*Persea americana*), with 741 calories per edible pound or 163 cal per 100 gr. That with the lowest value is cucumber with 73 calories per pound 16 cal per 100 gr. Avocados probably originated in Central and South America and contain also vitamins A, C, and E and 2.2 per cent protein.

Melon

A watermelon weighing 200 lb 90,7 kg was reported by Grace's Garden in April 1980. The growers were Ivan and Lloyd Bright of Hope, Arkansas, USA.

Pineapple Largest

A pineapple weighing 17 lb 7,71 kg was picked by H. Retief in Malindi, Kenya in December 1978.

Potato

A record display of 252 varieties of potato (*Solanum tuberosum*) was mounted at the Royal Horticultural Show in Westminster, London by Donald MacLean on 9-10 Oct, 1979.

FERNS

Largest

The largest of all the more than 6000 species of fern is the tree fern (*Alsophila excelsa*) of Norfolk Island, in the South Pacific, which attains a height of up to 60 ft 18,28 m.

RECORD DIMENSIONS AND WEIGHTS FOR FRUIT, VEGETABLES AND FLOWERS GROWN IN THE UNITED KINGDOM

Many data subsequent to 1958 come from the annual Garden News and Phostrogen Ltd. Giant Vegetable and Fruit Contest and the Super Sunflower Contest.

Apple	3 lb 1 oz	1,357 kg	V. Loveridge	Ross-on-Wye, Hereford and Worcester	1965
Artichoke	8 lb	3,625 kg	A. R. Lawson	Tollerton, North Yorkshire	1964
Beetroot	29 lb	13,154 kg	F. A. Pulley	Maidstone, Kent	1964
Broad Bean	23 3/4 in	59,3 cm	T. Currie	Jedburgh, Borders	1963
Broccoli	28 lb 14 3/4 oz	13,100 kg	J. T. Cooke	Funtington, W. Sussex	1964
Brussels Sprout ¹	16 lb 1 oz	7,285 kg	E. E. Jenkins	Shipston-on-Stour, Warwickshire	1974
Cabbage ²	114 lb 3 oz	51,8 kg	P. G. Barton	Cleckheaton, W. Yorkshire	1977
Carrot ³	7 lb 11 1/2 oz	3,501 kg	A. Howcroft	Huddersfield, W. Yorkshire	1979
Cauliflower	52 lb 11 1/2 oz	23,900 kg	J. T. Cooke	Funtington, W. Sussex	1966
Celery	35 lb	15,875 kg	C. Bowcock	Willaston, Merseyside	1973
Cucumber ⁴	11 lb 8 oz (indoor)	5,216 kg	R. Butcher	Stockbridge, Hants.	1978
	8 lb 4 oz (outdoor)	3,740 kg	C. Bowcock	Willaston, Merseyside	1973
Dahlia ⁵	9 ft tall	2,74 m	J. Crennan	Abbey Wood, London SE	1975
Dwarf Bean	17 1/2 in	43,4 cm	C. Bowcock	Willaston, Merseyside	1973
Gladiolus	8 ft 4 1/2 in	2,55 m	A. Breed	Melrose, Roxburghshire	1981
Gooseberry	2.06 oz	58,5 g	A. Dingle	Macclesfield, Cheshire	1978
Gourd	196 lb	88,900 kg	J. Leathes	Herrington Hall, Suffolk	1846
Grapefruit ⁶	3 lb 8 oz	1,585 kg	A. J. Frost	Willington, Bedfordshire	1977
Hollyhock	24 ft 3 in	7,39 m	W. P. Walshe	Eastbourne, E. Sussex	1961
Kale	12 ft tall	3,65 m	B. T. Newton	Mullion, Cornwall	1950
Leek	9 lb 5 1/2 oz	4,235 kg	C. Bowcock	Willaston, Merseyside	1973
Leek, Pot	100.38 in ³	1,644 cm ³	R. S. Bell	Ashington, Northumberland	1977
Lemon ⁶	3 lb 9 oz	1,628 kg	T. Buckeridge	Isfield, E. Sussex	1978
Lettuce	25 lb	11,335 kg	C. Bowcock	Willaston, Merseyside	1974
Lupin ⁷	6 ft 0 1/2 in	1,84 m	J. Lawlor	New Malden, Surrey	1971
Mangold	54 1/2 lb	24,720 kg	P. F. Scott	Sutton, Humberside	1971
Marrow ⁷	76 1/2 lb	34,7 kg	D. C. Payne	Tewkesbury, Glos.	1981
Mushroom ⁸	54 in circum.	1,37 m	—	Hasketon, Suffolk	1957
Onion	7 lb 6 oz	3,345 kg	S. C. Hill	Galashiels, Selkirk	1981
Parsnip ⁹	10 lb 8 1/2 oz	4,776 kg	C. Moore	Peacehaven, E. Sussex	1980
Pea Pod	10 1/8 in	25,7 cm	T. Currie	Jedburgh, Borders	1964
Pear ¹⁰	2 lb 10 1/2 oz	1,200 kg	Mrs. K. Loines	Hythe, Hampshire	1973
Petunia ¹¹	8 ft 4 in	2,53 m	G. A. Warner	Dunfermline, Fife	1978
Potato ¹¹	7 lb 1 oz	3,200 kg	J. H. East	Spalding, Lincolnshire	1963
Pumpkin ¹²	248 lb	112,49 kg	K. A. Mclean	Royston, Herts.	1981
Radish ¹³	17 lb	7,711 kg	K. Ayliffe	Brecon, Powys	1976
Red Cabbage	42 lb	19,05 kg	R. Straw	Staveley, Derbyshire	1925
Rhubarb	5 lb 11 oz	2,579 kg	A. C. Setterfield	Englefield, Berkshire	1978
Runner Bean	39 in long	99 cm	Mrs. E. Huxley	Churton, Cheshire	1976
Savoy	38 lb 8 oz	17,450 kg	W. H. Neil	Retford, Nottinghamshire	1966
Shallot ¹⁴	2 lb 12 oz (47 bulbs)	1,245 kg	M. Silverstoft	Falmouth, Cornwall	1977
Strawberry	7 1/4 oz	205 kg	E. Oxley	Walton-on-the-Naze, Essex	1972
Sugar Beet ¹⁴	28 lb	12,7 kg	W. Featherby	Everingham, Humberside	1977
Sunflower	23 ft 6 1/2 in tall	7,17 m	F. Kelland	Exeter, Devon	1976
Swede	48 lb 12 oz	22,11 kg	A. Foster	Alnwick, Northumberland	1980
Tomato ¹⁵	4 lb 4 oz	1,925 kg	C. Roberts	Eastbourne, E. Sussex	1974
Tomato Plant	45 ft 9 1/2 in (length)	13,96 m	Chosen Hill School	Gloucester, Glos.	1981
Tomato Truss	20 lb 4 oz	9,175 kg	C. Bowcock	Willaston, Merseyside	1973
Turnip ¹⁶	35 lb 4 oz	15,975 kg	C. W. Butler	Nafferton, Humberside	1972

¹ A Brussels Sprout plant measuring 11 ft 8 in 3,55 m was grown by Ralph G. Sadler of Watchbury Farm, Barford, Warwickshire on 6 July 1978.

² The Swallow, County Durham Red Cabbage of 1865 grown by William Collingwood (d. 8 Oct 1867) reputedly weighed 123 lb 55,7 kg and was 259 in 6,57 m in circumference.

³ A specimen of 7 kg 15 lb 7 oz was grown by Miss I. G. Scott of Nelson, New Zealand in October 1978.

⁴ A 13 lb 5,89 kg example was grown by George J. Kucera of Mexia, Texas, USA in July 1978. A Vietnamese variety 6 ft 1,83 m long was reported by L. Szabo of Debrecen, Hungary in September 1976.

⁵ A 10 ft 6 1/2 in 3,21 m dahlia was grown by Michael Power of Waterford, Ireland in 1981.

⁶ A 6 lb 4 oz 2,83 kg lemon with a 28 3/4 in 73 cm girth was reported by Mrs D. Knutzen of Whittier, California USA in January 1977.

⁷ A 96 lb 43,525 kg marrow has been reported from Suffolk.

⁸ Same size reported by J. Coombes at Mark, Somerset on 28 July 1965. In September 1968 one weighing 18 lb 10 oz 8,425 kg was reported from Whidbey I. Washington, USA. A specimen of the edible *Termitomyces titanicus* found near Kitwe, Zambia on 18 Dec 1978 measured 26 in 63 cm in diameter and weighed 5.5 lb 2,5 kg.

⁹ One 60 in 152 cm long was reported by M. Zaninovich of Waneroo W. Australia.

¹⁰ A specimen weighing 1,405 kg 3,09 lb was harvested on 10 May 1979 at Messrs K. & R. Yeomans, Arding, Armidale, NSW, Australia.

¹¹ One weighing 18 lb 4 oz 8,275 kg reported dug up by Thomas Siddal in his garden in Chester on 17 Feb 1975. A yield of 515 lb 233,5 kg from a 2 1/2 lb parent seed by Bowcock planted in April 1977. Six tubers weighing 54 lb 8 oz 24,72 kg by Alan Nunn of Rhodes, Greater Manchester were reported on 18 Sept 1949.

¹² A squash (*Cucurbita moschata*) of 513 lb 232,69 kg was grown by Harold Fulp, Jr., at Ninevah, Indiana, USA in 1977. A pumpkin (*C. maxima*) of 240 lb 108,8 kg was reported by Merl Sims of Binger, Oklahoma USA in Sept 1980.

¹³ A radish of 25 lb 11,34 kg was grown by Glen Tucker of Stanbury, South Australia in August 1974 and by Herbert Breslow of Ruskin, Florida, USA in 1977.

¹⁴ One weighing 45 1/2 lb 20,63 kg was grown by Robert Meyer of Brawley, California in 1974.

¹⁵ Grace's Gardens reported a 6 lb 8 oz 2,94 kg tomato grown by Clarence Daily of Monona, Wisconsin in 1977.

¹⁶ A 73 lb 33,1 kg turnip was reported in December 1768 and one of 51 lb 23,1 kg from Alaska in 1981.

* Not in official contest.

The heaviest orange ever reported is one weighing 5 lb 8 oz 2,50 kg exhibited in Nelspruit, South Africa on 19 June 1981. It was the size of a human head but was stolen.

Smallest

The world's smallest ferns are *Hacina pumila*, found in Central America, and *Anolis carolinensis*, which is native to the United States.

GRASSES**Commonest and fastest growing**

The world's commonest grass is *Cynodon dactylon* or Bermuda grass. The 'Callie' hybrid, selected in 1966, grows as much as 6 in 15.2 cm a day and stolons reach 18 ft 5.5 m in length. The tallest of the 160 grasses found in Great Britain is the common reed (*Phragmites communis*), which reaches a height of 9 ft 9 in 2.97 m.

Shortest

The shortest grass native to Great Britain is the very rare sand bent (*Mibora minima*) from Anglesey, Gwynedd which has a maximum growing height of under 6 in 15 cm.

LEAVES**Largest World**

The largest leaves of any plant belong to the raffia palm (*Raphia ruffia*) of the Mascarene Islands, in the Indian Ocean and the Amazonian bamboo palm (*R. toedigera*) of South America, whose leaf blades may measure up to 65 ft 19.81 m in length with petioles up to 13 ft 3.96 m.

The largest undivided leaf is that of *Alocasia macrorrhiza*, found in Sabah, East Malaysia. One found in 1966 was 9 ft 11 in 3.02 m long and 6 ft 3½ in 1.92 m wide, with a unilateral area of 34.2 ft² 3.17 m².

Largest Great Britain

The largest leaves to be found in outdoor plants in Great Britain are those of *Gunnera manicata* from Brazil with leaves 6–10 ft 1.82–3.04 m across on prickly stems 5–8 ft 1.52–2.43 m long.

Fourteen-leafed clover

A fourteen-leafed white clover (*Trifolium repens*) was found by Randy Farland near Sioux Falls, South Dakota, USA on 16 June 1975.

SEEDS**Largest**

The largest seed in the world is that of the double coconut or Coco de Mer (*Lodoicea seychellarum*), the single-seeded fruit of which may weigh 40 lb 18 kg. This grows only in the Seychelles, in the Indian Ocean.

Smallest

The smallest seeds are those of *Epiphytic* orchids, at 35,000,000 to the oz (cf. grass pollens at up to 6,000,000,000 grains/oz). A single plant of the American ragweed can generate 8,000,000,000 pollen grains in five hours.

Most viable

The most protracted claim for the viability of seeds is that made for the Arctic lupin (*Lupinus arcticus*) found in frozen silt at Miller Creek in the Yukon, Canada in July 1954 by Harold Schmidt. The seeds were germinated in 1966 and were dated by the radiocarbon method of associated material to at least 8000 BC and more probably to 13,000 BC.

Most conquering conker

The highest recorded battle honours for an untreated conker (fruit of the Common horse-chestnut or *Aesculus hippocastanum*) is a 'five thousander plus', which won the BBC Conker Conquest in 1954. A professor of botany has however opined that this heroic specimen might well have been a 'ringer', probably an ivory or tagua nut (*Phytelphas macrocarpa*).

TREES AND WOOD**Most massive tree**

The most massive living thing on Earth is the biggest known California big tree (*Sequoiadendron giganteum*) named the 'General Sherman', standing 280 ft 85 m tall, in the Sequoia National Park, California, USA. It has a true girth of 79.8 ft 24.32 m (1980) (at 5 ft 1.52 m above the ground). The 'General Sherman' has been estimated to contain the equivalent of 600,120 board feet of timber, sufficient to make 5,000,000,000 matches. The

foliage is blue-green, and the red-brown tan bark may be up to 24 in 61 cm thick in parts. In 1968 the official published figure for its estimated weight was '2145 tons' (1915 long tons 2030 tonnes). The largest known petrified tree is one of this species with a 295 ft 89.9 m trunk near Coaldale, Nevada, USA.

The seed of a 'big tree' weighs only 1/6000th of an oz 4.7 mg. Its growth at maturity may therefore represent an increase in weight of over 250,000 million-fold.

The tree canopy covering the greatest area is the great Banyan *Ficus bengalensis* in the Indian Botanical Garden, Calcutta with some 1000 subsidiary trunks formed from aerial roots. It covers overall some 4 acres 1.6 ha and is believed to date from c. 1770.

Greatest girth World

The Santa Maria del Tule Tree, in the state of Oaxaca, in Mexico is a 160 ft 48.7 m tall Montezuma cypress (*Taxodium mucronatum*) with a girth of 125.7 ft 38.31 m at a height of 5 ft 1.52 m above the ground. A figure of 167 ft 51 m in circumference was reported for the pollarded European chestnut (*Castanea sativa*) known as the 'Tree of the 100 Horse' (Castagno di Cento Cavalli) on Mount Etna, Sicily, Italy in 1972.

Greatest girth Britain

The tree of greatest girth in Britain is a sweet ('Spanish') chestnut (*Castanea sativa*) in the grounds of Canford School, Nr. Wimborne, Dorset, with a bole 43 ft 9 in 13.33 m in circumference. The largest-girthed living British oak is one at Bowthorpe Farm near Bourne, south Lincolnshire, measured in September 1973 to be 39 ft 1 in 11.91 m. The largest 'maiden' (i.e. not pollarded) oak is the Majesty Oak at Fredville Park, near Nonington, Kent, with a girth of (1973) 38 ft 1 in 11.60 m.

Fastest growing

Discounting bamboo, which is not botanically classified as a tree, but as a woody grass, the fastest rate of growth recorded is 35 ft 3 in 10.74 m in 13 months by an *Albizia falcata* planted on 17 June 1974 in Sabah, Malaysia. The youngest recorded age for a tree to reach 100 ft 30.48 m is 64 months for one of the species planted on 24 Feb 1975, also in Sabah.

Slowest growing

The speed of growth of trees depends largely upon conditions, although some species, such as box and yew, are always slow-growing. The extreme is represented by a specimen of Sitka spruce which required 98 years to grow to 11 in 28 cm tall with a diameter of less than 1 in 2.5 cm on the Arctic tree-line. The growing of miniature trees or *bonsai* is an oriental cult mentioned as early as c. 1320.

Tallest World

The world's tallest known species of tree is the coast redwood (*Sequoia sempervirens*), now found growing indigenously only near the coast of California from just across the Oregon border south to Monterey. The tallest measured example is 'Tallest Tree' in Redwood Creek Grove, Humboldt County, California discovered by Dr Paul A. Zahl in 1963 to be 367.8 ft 112.10 m with a dead top and re-estimated at 366.2 ft 111.60 m in 1970. It has a girth of 43 ft 11 in 13.38 m. 'Tallest Tree' is dying back slowly. Several trees with healthy growing tips are 360+ ft 110+ m in groves by Bull Creek near Weott, California. The tallest non-sequoia is a Douglas fir at Quinault Lake Park trail, Washington, USA of c. 310 ft 94.5 m.

The tallest broadleaf tree in the world is a *Eucalyptus regnans* (mountain ash) growing in the Styx Valley, Tasmania, and measured at 99 m 325 ft.

Tallest All-time

The identity of the tallest tree of all-time has never been satisfactorily resolved. Although there have been claims as high as 525 ft 160 m (subsequently reduced in May 1889 on re-measurement to 220 ft 67 m), the now accepted view is that maximum height recorded by a qualified surveyor was the 375 ft 114.3 m Cornthwaite Tree (*Eucalyptus regnans*, formerly *E. amygdalina*) in Thorpdale, Gippsland, Victoria in 1880. Claims for a Douglas fir (*Pseudotsuga taxifolia*) of 417 ft 127.10 m with a 77 ft 23.47 m circumference felled by George Carey in 1895 in British Columbia have been obscured, though not necessarily

invalidated by a falsified photograph. The tallest specimen now known is c. 310 ft 94.5 m (see above). A coast redwood of 367 ft 112.06 m felled in 1873 near Guerneville, California, USA, was thus almost precisely the same height as 'Tallest Tree' as originally measured.

Tallest Great Britain

The tallest trees in Great Britain are a Grand fir (*Abies grandis*) at Strone, Cairndow, Strathclyde, and Douglas firs at The Hermitage, Perth and at Moniac Glen, Inverness. All were a few feet over 190 ft 58 m (1980). The tallest in England is a Douglas fir (*Pseudotsuga taxifolia*) measured at 188 ft 9 in 57.53 m at Cedig Bridge near Oswestry, Shropshire on 1 Mar 1981. The tallest measured in Northern Ireland is a Giant Sequoia (*Sequoiadendron giganteum*), measured in 1976 to be 158 ft 48 m tall at Caledon Castle, County Tyrone. The tallest in Wales is a Grand Fir (*Abies grandis*) at Leighton Park, Powys (pl. 1886) measured in 1982 to be 190 ft 58 m.

Tallest Ireland

The tallest tree in Ireland is a Sitka spruce (*Picea sitchensis*) 166 ft 50.59 m tall at Curraghmore, Waterford, measured in March 1974.

Tallest Christmas Tree

The world's tallest cut Christmas tree was a 221 ft 67.36 m tall Douglas fir (*Pseudotsuga taxifolia*) erected at Northgate Shopping Center, Seattle, Washington in December 1950. The tallest Christmas tree erected in Britain was the 85 ft 3¼ in 25.98 m long spruce from Norway erected for the Canterbury Cathedral appeal on the South Bank, London on 20 Nov 1975.

Oldest tree World

The oldest recorded tree was a bristlecone pine (*Pinus longaeva*) designated WPN-114, which grew at 10,750 ft 3275 m above sea-level on the north-east face of the Wheeler Ridge on the Sierra Nevada, California, USA. During studies in 1963 and 1964 it was found to be about 4900 years old but was cut down with a chain saw. The oldest known living tree is the bristlecone pine named *Methuselah* at 10,000 ft 3050 m in the California side of the White Mountains confirmed as 4600 years old. In March 1974 it was reported that this tree had produced 48 live seedlings. Dendrochronologists estimate the potential life-span of a bristlecone pine at nearly 5500 years, but that of a 'Big Tree' at perhaps 6000 years. No single cell lives more than 30 years. A report in March 1976 stated that some enormous specimens of Japanese cedar (*Cryptomeria japonica*) had been dated by carbon-14 to 5200 bc. The great ages attributed to the Canary Island dragon tree (*Dracaena draco*) are discounted by botanists.

Oldest tree Great Britain

Of all British trees that with the longest life is the yew (*Taxus baccata*), for which a maximum age well in excess of 1000 years is

TALLEST TREES IN UNITED KINGDOM

By species

	ft	m
Alder (Italian)	98	30
Alder (Common)	96	29
Ash	121	37
Beech	135	41
Beech (Copper)	121	37
Birch (Silver)	97	29
Cedar (Blue Atlas)	125	38
Cedar (of Lebanon)	132	40
Chestnut (Horse)	125	38
Chestnut (Sweet)	118	35
Cypress (Lawson)	133	40
Cypress (Leyland)	111	34
Cypress (Monterey)	121	37
Douglas Fir	190+	58+
Elm (Wych) ¹	128	39
Eucalyptus (Blue Gum)	140	42
Grand Fir	190+	58+
Ginkgo	93	28
Hemlock (Western)	164	50
Holly	74	22
Hornbeam	105	32
Larch (European)	150	46
Larch (Japanese)	123	37
Lime	150	45
Metasequoia	80	24
Monkey Puzzle	95	29
Oak (Common)	121	37
Oak (Sessile)	140	42
Oak (Red)	115	35
Pear	64	19
Pine (Corsican)	144	44
Plane	145	44
Poplar (Black Italian)	150	46
Poplar (Lombardy)	118	35
Redwood (Coast)	148	45
Silver Fir	158	48
Spruce (Sitka)	180	55
Sycamore	112	34
Tulip-tree	120	36
Walnut	80	24
Walnut (Black)	105	32
Wellingtonia	165	50
Willow (Weeping)	76	23
Wingnut (Caucasian)	115	35
Yew	95	29
Westonbirt, Gloucester		
Old Roar Ghyll, St. Leonards, East Sussex		
Cockington Ct. Devon		
Whitfield Ho., Hereford & Worcs.		
Chart Park Golf Course, Dorking, Surrey		
Woburn Sands, Bedfordshire		
Brockhampton Pk, Hereford & Worcs.		
Petworth House, West Sussex		
Petworth House, West Sussex		
Godinton Park, Kent		
Endsleigh, Devon		
Bicton, Devon		
Montacute House, Somerset		
Moniac Glen, Inverness		
Rossie Priory, nr Dundee		
Glengariff, Co. Cork		
Strone, Cairndow, Strathclyde		
Linton Park (Maldstone), Kent		
Murthly Castle, Tayside		
Staverton Thicks, Suffolk		
West Park, Bedfordshire		
Glenlee, Dumfries & Galloway		
Blair Castle, Tayside		
Duncombe Park, North Yorks.		
Savill Garden, Berks.		
Lochnaw, Dumfries & Galloway		
Petworth House, West Sussex		
Whitfield Ho., Hereford & Worcs.		
Cowdray Park, West Sussex		
Borde Hill, West Sussex		
Stanage Park, Powys		
Bryanston, Dorset		
Fairlawne, Kent		
Marble Hill, Twickenham, G. London		
Bodnant, Gwynedd		
Benmore, Strathclyde		
Murthly, Tayside		
Drumlanrig Castle, Dumfries & Gal.		
Taplow House, Buckinghamshire		
Bayhurst, Newport Pagnell, Northants.		
Battersea Park, London		
Endsleigh, Devon		
Trinity College, Cambridge		
Abbotsbury, Dorset		
Close Walks, Midhurst, W. Sussex		

¹ It was estimated in 1980 that more than 17 million of the 23 million elms in southern England had since 1968 been killed by the fungus that causes Dutch elm disease *Ceratocystis ulmi*.

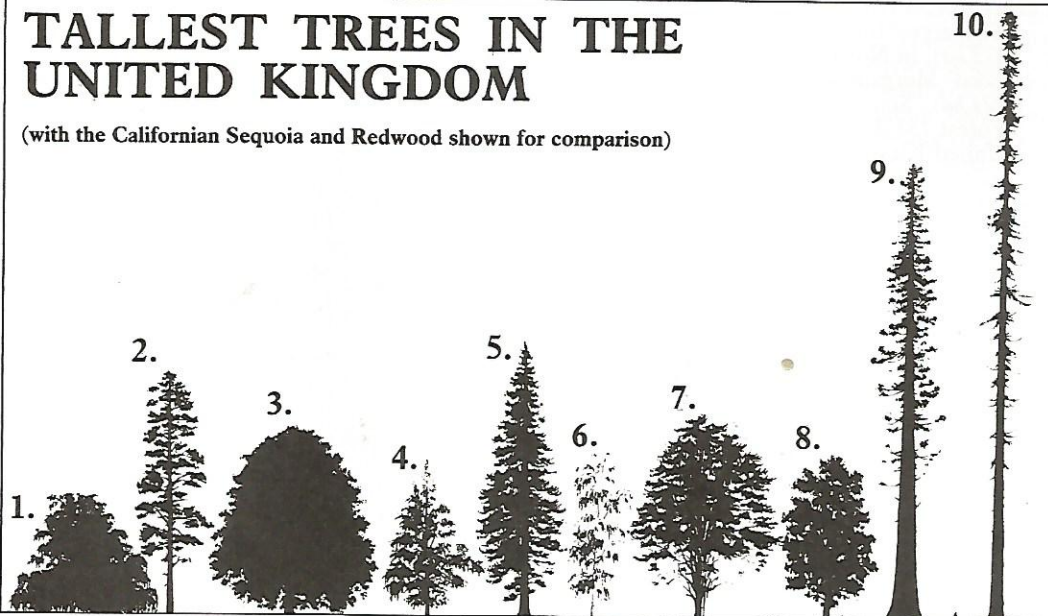
usually conceded. The oldest known is the Forthingall Yew near Aberfeldy, Tayside, part of which still grows. In 1777 this tree was over 50 ft 15.24 m in girth and it cannot be much less than 1500 years old today. The 1500 years attributed by the Royal Archeological Society to the Eastham yew in Wirral is not accepted by present day expert opinion.

Earliest species

The earliest species of tree still surviving is the maiden-hair tree (*Ginkgo biloba*) of Chekiang, China, which first appeared about 160,000,000 years ago, during the Jurassic era. It was 're-

TALLEST TREES IN THE UNITED KINGDOM

(with the Californian Sequoia and Redwood shown for comparison)



1. Weeping Willow 76 ft 23 m
2. Corsican Pine 144 ft 44 m
3. Copper Beech 121 ft 37 m
4. Ginkgo 93 ft 28 m
5. Wellingtonia 165 ft 50 m
6. Silver Birch 97 ft 29 m
7. Monterey Cypress 121 ft 37 m
8. Black Walnut 105 ft 32 m
9. Giant Sequoia 290 ft 88 m
10. Coast Redwood 366 ft 111 m

Scale: A 6 ft 1.82 m man between No. 9 and No. 10.



Anton van Leeuwenhoek, the Dutch microscopist who discovered both bacteria in 1675 and protista in 1676. (Rijksmuseum, Amsterdam)

discovered' by Kaempfer (Netherlands) in 1690 and reached England c. 1754. It has been grown in Japan since c. 1100 where it was known as *ginkyō* ('silver apricot') and is now known as *icho*.

Most leaves

Little work has been done on the laborious task of establishing which species has most leaves. A large oak has perhaps 250,000 but a Cypress may have some 45–50 million leaf scales.

Remotest

The tree remotest from any other tree is believed to be one at an oasis in the Ténéré Desert, Niger Republic. In February 1960 it survived being rammed by a lorry driven by a Frenchman. There were no other trees within 50 km 31 miles. The tree was transplanted and it is now in the Museum at Niamey, Niger.

Most expensive

The highest price ever paid for a tree is \$51,000 (then £18,214) for a single Starkspur Golden Delicious apple tree from near Yakima, Washington, USA, bought by a nursery in Missouri in 1959.

Largest forest World

The largest afforested areas in the world are the vast coniferous forests of the northern USSR, lying mainly between latitude 55° N, and the Arctic Circle. The total wooded area amounts to 2,700,000,000 acres 1100 million ha (25 per cent of the world's forests), of which 38 per cent is Siberian larch. The USSR is 34 per cent afforested.

Largest forest Great Britain

The largest forest in England is Kielder Forest (72,336 acres 29 273 ha), in Northumberland. The largest forest in Wales is the Coed Morgannwg (Forest of Glamorgan) (42,555 acres 17 221 ha). Scotland's most extensive forest is the Glen Trool Forest (51,376 acres 20 791 ha) in Kirkcudbrightshire. The United Kingdom is 7 per cent afforested.

Longest Avenue of Trees

The longest avenue of trees is the beech avenue in Savernake Forest near Marlborough, Wiltshire measuring 3.5 miles 5.6 km.

Wood Heaviest

The heaviest of all woods is black ironwood (*Olea laurifolia*), also called South African ironwood, with a specific gravity of up to 1.49, and weighing up to 93 lb/ft³ 1490 kg/m³. The heaviest British wood is boxwood (*Buxus sempervirens*) with an extreme of 64 lb/ft³ 1025 kg/m³.

Wood Lightest

The lightest wood is *Aeschynomene hispida*, found in Cuba, which has a specific gravity of 0.044 and a weight of only 2¾ lb/ft³ 44 kg/m³. The wood of the balsa tree (*Ochroma pyramidale*) is of very variable density—between 2½ and 24 lb/ft³ 40 and 384 kg/m³. The density of cork is 15 lb/ft³ 240 kg/m³.

Bamboo Tallest

The tallest recorded bamboo was a Thorny bamboo culm (*Bambusa arundinacea*) felled at Pattazhi, Travancore, Southern India, in November 1904 measuring 121½ ft 37.03 m.

Bamboo Fastest growing

Some species of the 45 genera of bamboo have attained growth rates of up to 36 in 91 cm per day (0.00002 mph 0.00003 km/h), on their way to reaching a height of 100 ft 30 m in less than three months.

KINGDOM PROTISTA

PROTISTA

Protista were first discovered in 1676 by Antonie van Leeuwenhoek of Delft (1632–1723), a Dutch microscopist. Among Protista are characteristics common to both plants and animals. The more plant-like are termed Protophyta (protophytes), including unicellular algae, and the more animal-like are placed in the phylum Protozoa (protozoans), including amoeba and flagellates.

Largest

The largest protozoans which are known to have existed were the now extinct Nummulites, which each had a diameter of 0.95 in 24.1 mm. The largest existing protozoan is *Pelomyxa palustris*, which may attain a length of up to 0.6 in 15.2 mm.

Smallest

The smallest of all protophytes is the marine microflagellate alga *Micromonas pusilla*, with a diameter of less than 2 microns or micrometres (2×10^{-6} m) or 0.00008 in.

Fastest moving

The protozoan *Monas stigmatica* has been measured to move a distance equivalent to 40 times its own length in a second. No human can cover even seven times his own length in a second.

Fastest reproduction

The protozoan *Glaucoma*, which reproduces by binary fission, divides as frequently as every three hours. Thus in the course of a day it could become a 'six greats grandparent' and the progenitor of 510 descendants.

KINGDOM FUNGI

Largest

Matthew Fogarty of Ayton, Berwickshire found a puff ball (*Lycoperdon gigantea*) 64 in 162.5 cm in circumference and 16¼ in 41.2 cm high on 9 Mar 1980. A specimen also of 64 in 162.5 cm in circumference was recorded in New York State, USA in 1877. A 72 lb 32.6 kg example of the edible mushroom (*Polyporus frondosus*) was reported by Joseph Opple near Solon, Ohio in September 1976.

The largest officially recorded tree fungus was a specimen of *Oxyporus (Fomes) nobilissimus*, measuring 56 in 142 cm by 37 in 94 cm and weighing at least 300 lb 136 kg found by J. Hisey in Washington State, USA, in 1946. The largest recorded in the United Kingdom is an ash fungus (*Fomes fraxineus*) measuring 50 in by 15 in 127 cm by 38 cm wide, found by the forester A. D. C. LeSueur on a tree at Waddesdon, Buckinghamshire, in 1954.

Most poisonous toadstool

The yellowish-olive death cap (*Amanita phalloides*) is regarded as the world's most poisonous fungus. It is found in England. From six to fifteen hours after tasting, the effects are vomiting, delirium, collapse and death. Among its victims was Cardinal Giulio de' Medici, Pope Clement VII (b. 1478) on 25 Sept 1534.

The Registrar General's Report states that between 1920 and 1950 there were 39 fatalities from fungus poisoning in the United Kingdom. As the poisonous types are mostly *Amanita* varieties, it is reasonable to assume that the deaths were predominantly due to *Amanita phalloides*. The most recent fatality was probably in 1960.

Acroflora

Fungi were once classified in the subkingdom Protophyta of the Kingdom Protista. The highest total fungal spore count was 161,037 per m³ near Cardiff on 21 July 1971. A plant tree pollen count of 2160 per m³ was recorded near London on 9 May 1971. The lowest counts of airborne allergens are nil. The highest recorded grass pollen count in Britain was one of 2824 per m³ recorded at Aberystwyth on 29 June 1961.

KINGDOM PROCARYOTA

Earliest life form

In June 1980 Prof J. William Schopf announced the discovery of 5 microbial life forms in rock dated to 3500 million years old in the 'North Pole' region of northern Western Australia.

The earliest life-form reported from Britain is *Kakabekia barghoorniana*, a microorganism similar in form to an orange slice, found near Harlech, Gwynedd, Wales in 1964 and dated to 2000 million years ago.

BACTERIA

Antonie van Leeuwenhoek (1632–1723) was the first to observe bacteria in 1675. The largest of the bacteria is the sulphur bacterium *Beggiatoa mirabilis*, which is from 16 to 45 microns in width and which may form filaments several millimetres long.

The bacteria *Thermoactinomyces vulgaris* have been found alive in cores of mud taken from the bottom of Windermere, Cumbria, England which have been dated to 1500 years before the present.

Smallest free-living entity

The smallest of all free-living organisms are pleuro-pneumonia-like organisms (PPLO) of the *Mycoplasma*. One of these, *Mycoplasma laidlawii*, first discovered in sewage in 1936, has a diameter during its early existence of only 100 millimicrons, or 0.000004 in. Examples of the strain known as H.39 have a maximum diameter of 300 millimicrons and weigh an estimated 1.0×10^{-16} gramme. Thus a 174 ton 177 tonnes Blue whale would weigh 1.77×10^{24} or 1.7 quadrillion times as much.

Highest

In April 1967 the US National Aeronautics and Space Administration reported that bacteria had been recently discovered at an altitude of 135,000 ft (25.56 miles) 41 100 m.

Longest lived

The oldest deposits from which living bacteria are claimed to have been extracted are salt layers near Irkutsk, USSR, dating from about 600,000,000 years ago. The discovery was not accepted internationally. The US Dry Valley Drilling Project in Antarctica claimed resuscitated rod-shaped bacteria from caves up to a million years old.

Fastest

The rod-shaped bacillus *Bdellovibrio bacteriovorus*, by means of a polar flagellum rotating 100 times/sec, can move 50 times its own length of 2 µm per second. This would be the equivalent of a human sprinter reaching 200 mph 320 kmh.

Toughest

The bacterium *Micrococcus radiodurans* can withstand atomic radiation of 6.5 million röntgens or 10,000 times that fatal to the average man.

VIRUSES**Largest**

Dmitriy Ivanovsky (1864–1920) first reported filterable objects in 1892 but Martinus Willem Beijerinck (1851–1931) first confirmed the nature of viruses in 1898. These are now defined as aggregates of two or more types of chemical (including either DNA or RNA) which are infectious and potentially pathogenic. The longest known is the rod-shaped *Citrus tristeza* virus with particles measuring 200×10 nm (1 nanometer = 1×10^{-9} m).

Smallest

The smallest known viruses are the nucleoprotein plant viruses such as the satellite of tobacco necrosis virus with spherical

particles 17 nm in diameter. A putative new infectious sub-microscopic organism but without nucleic acid, named a 'prion', was announced from the University of California in February 1982.

PARKS, ZOOS, OCEANARIA AND AQUARIA

PARKS**Largest World**

The world's largest park is the Wood Buffalo National Park in Alberta, Canada (established 1922), which has an area of 11,172,000 acres (17,560 miles² 45 480 km²).

Largest Britain

The largest National Park in Great Britain is the Lake District National Park which has an area of 866 miles² 2240 km². The largest private park in the United Kingdom is Woburn Park (3000 acres 1200 ha), near Woburn Abbey, the seat of the Dukes of Bedford.

ZOOS**Largest game reserve**

It has been estimated that throughout the world there are some 500 zoos with an estimated annual attendance of 330,000,000. The largest zoological reserve in the world has been the Etosha Reserve, Namibia established in 1907 with an area which grew to 38,427 miles² 99 525 km².

Oldest

The earliest known collection of animals was that set up by Shulgi, a 3rd dynasty ruler of Ur in 2094–2047 BC at Puzurish in south-east Iraq. The oldest known zoo is that at Schönbrunn, Vienna, Austria, built in 1752 by the Holy Roman Emperor Franz I for his wife Maria Theresa. The oldest existing privately owned zoo in the world is that of the Zoological Society of London, founded in 1826. Its collection, housed partly in Regent's Park, London (36 acres 14.5 ha) and partly at Whipsnade Park, Bedfordshire (541 acres 219 ha) (opened 23 May 1931), is the most comprehensive in the United Kingdom. The stocktaking on 1 Jan 1982 accounted for a total of 10,696 specimens. These comprised 2168 mammals, 2163 birds, 417 reptiles and amphibians, an estimated total of 1498 fish and an estimated total of 4450 invertebrates. Locusts, ants and bees are excluded from these figures. The record annual attendances are 3,031,571 in 1950 for Regent's Park and 756,758 in 1961 for Whipsnade.

OCEANARIA**Earliest and largest**

The world's first oceanarium is Marineland of Florida, opened in 1938 at a site 18 miles 29 km south of St Augustine, Florida, USA. Up to 5,800,000 gal 26.3 million litres of sea-water are pumped daily through two major tanks, one rectangular (100 ft 30.48 m long by 40 ft 12.19 m wide by 18 ft 5.48 m deep) containing 375,000 gal 1.7 million litres and one circular (233 ft 71 m in circumference and 12 ft 3.65 m deep) containing 330,000 gal 1.5 million litres. The tanks are seascaped, including coral reefs and even a shipwreck. The salt water tank at Hanna-Barbera's Marineland, located at Palos Verdes, California, USA is 251½ ft 76.65 m in circumference and 22 ft 6.7 m deep, with a capacity of 530,000 gal 2.4 million litres. The total capacity of this whole oceanarium is 2,080,000 gal 9.4 million litres. Their killer whale 'Orky' at 14,000 lb 6350 kg is the largest in captivity.

AQUARIA**Largest aquarium**

The world's largest aquarium, as opposed to fish farm, is the John G. Shedd Aquarium at 12th Street and Lake Shore Drive, Chicago, Illinois, USA, completed in November 1929 at a cost of \$3,250,000 (then £668,725). The total capacity of its display tanks is 375,000 gal 1.7 million litres with reservoir tanks holding 1,665,000 gal 7.5 million litres. Exhibited are 5500 specimens from 350 species. Most of these specimens are collected by the Aquarium collecting boat based in Miami, Florida, and are shipped by air to Chicago. The record attendances are 78,658 in a day on 21 May 1931, and 4,689,730 visitors in the single year of 1931.

3. The Natural World

GUINNESS BOOK OF RECORDS



Natural phenomena

THE EARTH

The Earth is not a true sphere, but flattened at the poles and hence an oblate. The polar diameter of the Earth, 7999.806 miles (12 713.505 km), is 26.575 miles (42.769 km) less than the equatorial diameter (7926.381 miles 12 756.274 km). The Earth has a pear shaped asymmetry with the north polar radius being 148 ft 45 m longer than the south polar radius. There is also a slight ellipticity of the equator since its long axis (about longitude 37° W) is 522 ft 159 m greater than the short axis. The greatest departures from the reference ellipsoid are a protuberance of 240 ft 73 m in the area of Papua New Guinea and a depression of 344 ft 105 m south of Sri Lanka, in the Indian Ocean.

The greatest circumference of the Earth, at the equator, is 24,901.46 miles 40 075.02 km, compared with 24,859.73 miles 40 007.86 km at the meridian. The area of the surface is estimated to be 196,937,400 miles² 510 065 600 km². The period of axial rotation, i.e. the true sidereal day, is 23 hr 56 min 4.0996 sec, mean time.

The mass of the Earth is 5,880,000,000,000,000,000 tons 5,974 × 10²¹ tonnes and its density is 5.515 times that of water. The volume is an estimated 259,875,300,000 miles³ 1 083 207 000 000 km³. The Earth picks up cosmic dust but estimates vary widely with 30,000 tons/tonnes a year being the upper limit. Modern theory is that the Earth has an outer shell or lithosphere 50 miles 80 km thick, then an outer and inner rock layer or mantle extending 1745 miles 2809 km deep, beneath which there is an iron rich core of radius 2164 miles 3482 km. If the iron rich core theory is correct, iron would be the most abundant element in the Earth. At the centre of the core the estimated density is 13.09 g/cm³; the temperature 4000–4500°C and the pressure 23,600 tons f/in² or 364 GPa.

1. NATURAL PHENOMENA

EARTHQUAKES

(Note: Seismologists record all dates with the year *first*, based not on local time but on Greenwich Mean Time).

Greatest World

It is estimated that each year there are some 500,000 detectable seismic or micro-seismic disturbances of which 100,000 can be felt and 1000 cause damage.

An inherent limitation in the widely used Gutenberg–Richter scale (published in 1954) precludes its usefulness when extended to the relative strengths of the strongest earthquakes ever recorded. Its use of surface-wave magnitudes, based on amplitudes of waves of a period of 20 sec, results in the 'damping' of any increase in amplitude where fault ruptures break over a length much above 60 km 37 miles. These however provenly may reach a length of 800 to 1000 km 500–620 miles. This 'overload' or 'saturation effect' has resulted in the adoption since 1977 of the Kanamori scale for comparing the most massive earthquakes. Magnitudes are there defined in terms of energy release using the concept of the seismic moment, devised by K-Aki in 1966. Thus the most massive instrumentally recorded earthquake has been the cataclysmic Lebu shock south of Concepción, Chile on 1960 May 22 estimated at 10²⁶ ergs. While this uniquely rates a magnitude of 9.5 on the Kanamori scale, it ranks in only equal 4th place (with the 1922 Chilean earthquake) at Magnitude 8.3 on the Gutenberg–Richter scale. For the removal of doubt the progressive records on the two scales are thus.

PROGRESSIVE LIST OF THE WORLD'S STRONGEST INSTRUMENTALLY RECORDED EARTHQUAKES

Kanamori Scale Magnitudes M _s	Gutenberg–Richter Scale Magnitude M _w	Where M _s = 2/3(log ₁₀ E – 11.8) and M _w = 2/3 [log ₁₀ (2E × 10 ⁴) – 10.7] Where E = energy released in dyne/cm	
8.8 (8.6)	8.6	Colombia coast	1906 Jan 31
9.0	8.6 (8 1/4)	Assam, India	1950 Aug 15
9.1	(8.3)	Kamchatka, USSR	1952 Nov 4
9.5	(8.3)	Andreanof, Aleutian Is., USA	1957 Mar 9
		Lebu, Chile	1960 May 22

Worst death toll World

The greatest loss of life occurred in the earthquake (*ni chow*) in the Shensi, Shansi and Honan provinces of China, of 1556 Feb 2, (new style) (Jan 23 os) when an estimated 830,000 people were killed. The highest death toll in modern times has been in the Tangshan 'quake (Mag. 8.2) in Eastern China on 1976 July 27 (local time was 3 a.m. July 28). A first figure published on 4 Jan 1977 revealed 655,237 killed, later adjusted to 750,000. On 22 Nov 1979 the New China News Agency unaccountably reduced the death toll to 242,000. The site of the city was still a prohibited area 5½ years later in Jan 1982. The greatest material damage was in the 'quake on the Kwantō plain, Japan, of 1923 Sept 1 (Mag. 8.2, epicentre in Lat. 35° 15' N, Long. 139° 30' E). In Sagami Bay the sea-bottom in one area sank 400 m 1310 ft. The official total of persons killed and missing in the *Shinsai* or great 'quake and the resultant fires was 142,807. In Tōkyō and Yokohama 575,000 dwellings were destroyed. The cost of the damage was estimated at £1000 million (now more than £4000 million). It has however been estimated that a 7.5 magnitude shock (G-R scale) 30 miles 48 km north of Los Angeles would result in damage estimated at \$70,000 million.

Worst death toll Great Britain and Ireland

The East Anglian or Colchester earthquake of 1884 Apr 22 (9.18 a.m.) (epicentres Lat. 51° 48' N, Long. 0° 53' E, and Lat. 51° 51' N, Long. 0° 55' E) caused damage estimated at £10,000 to 1200 buildings, and according to *The Great English Earthquake* by Peter Haining, the death of at least 3 and possibly 5 people. Langenhoe Church was wrecked. Windows and doors were rattled over an area of 53,000 miles² 137 250 km² and the shock was felt in Exeter and Ostend, Belgium. It has been estimated to have been of magnitude 6 on the Richter scale. The most marked since 1884 and the worst since instruments have been in use (*i.e.* since 1927) occurred in the Midlands at 3.43 p.m. on 1957 Feb 11, showing a strength of between five and six on the Davison scale. The strongest Scottish tremor occurred at Inverness at 10.45 p.m. on 1816 Aug 13, and was felt over an area of 50,000 miles² 130 000 km². The strongest Welsh tremor occurred in Swansea at 9.45 a.m. on 1906 June 27 (epicentre Lat. 51° 38' N, Long. 4° W). It was felt over an area of 37,800 miles² 97 900 km². No earthquake with its epicentre in Ireland has ever been instrumentally measured, though the effects of remoter shocks have been felt. However, there was a shock in 1734 August which damaged 100 dwellings and five churches.

VOLCANOES

The total number of known active volcanoes in the world is 850 of which many are submarine. The greatest active concentration is in Indonesia, where 77 of its 167 volcanoes have erupted within historic times. The name volcano derives from the now dormant Vulcano Island (from the God of fire Vulcanus) in the Aeolian group in the Mediterranean.

Greatest eruption

The total volume of matter discharged in the eruption of Tambora, a volcano on the island of Sumbawa, in Indonesia, 5-7 Apr 1815, has been estimated at 36.4 miles³ 151.7 km³. The energy of this eruption which lowered the height of the island from 13,450 ft 4100 m to 9350 ft 2850 m was 8.4×10^{26} ergs. The volcano lost about 4100 ft 1250 m in height and a crater seven miles 11 km in diameter was formed. This compares with a probable 15 miles³ 62.5 km³ ejected by Santorini and 4.3 miles³ 18 km³ ejected by Krakatoa (see Greatest explosion). The internal pressure causing the Tambora eruption has been estimated at 46,500,000 lb/in² or more than 20,750 tons/in² 3 270 000 kg/cm².

The ejecta in the Taupo eruption in New Zealand c. AD 130 has been estimated at 30,000 million tonnes/tons of pumice moving at one time at 400 mph 700 km/h. It flattened 16 000 km² 6180 miles² (over 26 times the devastated area of Mt. St. Helens). Less than 20 per cent of the 14×10^9 tonnes of pumice ejected in this most violent of all documented volcanic events fell within 200 km 125 miles of the vent.

Longest lava flow

The longest lava flow in historic times, known as *pahoehoe* (twisted cord-like solidifications), is that from the eruption of Laki in 1783 in south-east Iceland which flowed 65-70 km 40.5-43.5 miles. The largest known pre-historic flow is the Roza basalt flow in North America c. 15 million years ago, which had

an unsurpassed length (480 km 300 miles), area (40 000 km² 15,400 miles²) and volume (1250 km³ 300 miles³).

Greatest explosion

The greatest explosion (possibly since Santorini in the Aegean Sea c. 1470 BC) occurred at c. 10 a.m. (local time), or 3.00 a.m. GMT, on 27 Aug 1883, with an eruption of Krakatoa, an island (then 18 miles² 47 km²) in the Sunda Strait, between Sumatra and Java, in Indonesia. A total of 163 villages were wiped out, and 36,380 people killed by the wave it caused. Rocks were thrown 34 miles 55 km high and dust fell 3313 miles 5330 km away 10 days later. The explosion was recorded four hours later on the island of Rodrigues, 2968 miles 4776 km away, as 'the roar of heavy guns' and was heard over 1/13 the part of the surface of the globe. This explosion has been estimated to have had about 26 times the power of the greatest H-bomb test detonation but was still only a fifth part of the Santorini cataclysm.

Highest Extinct

The highest extinct volcano in the world is Cerro Aconcagua (stone sentinel) (22,834 ft 6960 m) on the Argentine side of the Andes. It was first climbed on 14 Jan 1897 by Mathias Zurbriggen and was the highest summit climbed anywhere until 12 June 1907.

Highest Dormant

The highest dormant volcano is Volcán Llullaillaco (22,057 ft 6723 m), on the frontier between Chile and Argentina.

Highest Active

The highest volcano regarded as active is Volcán Antofalla (6450 m 21,162 ft), in Argentina, though a more definite claim is made for Volcán Guayatiri or Gualatiri (19,882 ft 6060 m), in Chile, which erupted in 1959.

Northernmost and southernmost

The northernmost volcano is Beeren Berg (7470 ft 2276 m) on the island of Jan Mayen (71° 05' N) in the Greenland Sea. It erupted on 20 Sept 1970 and the island's 39 inhabitants (all male) had to be evacuated. It was possibly discovered by Henry Hudson in 1607 or 1608, but definitely visited by Jan Jacobsz May (Netherlands) in 1614. It was annexed by Norway on 8 May 1929. The Ostenseo seamount (5825 ft 1775 m) 346 miles 556 km from the North Pole in Lat. 85° 10' N, Long. 133° W was volcanic. The most southerly known active volcano is Mount Erebus (12,450 ft 3795 m) on Ross Island (77° 35' S), in Antarctica. It was discovered on 28 Jan 1841 by the expedition of Captain (later Rear-Admiral Sir) James Clark Ross, RN (1800-62), and first climbed at 10 a.m. on 10 Mar 1908 by a British party of five, led by Professor (later Lieut.-Col. Sir) Tannatt William Edgeworth David (1858-1934).

Largest crater

The world's largest caldera or volcano crater is that of Mount Aso (5223 ft 1590 m) in Kyūshū, Japan, which measures 17 miles 27 km north to south, 10 miles 16 km east to west and 71 miles 114 km in circumference.

GEYSERS**Tallest World**

The Waimangu (Maori, *black water*) geyser, in New Zealand, erupted to a height in excess of 1500 ft 457 m in 1904, but has not been active since it erupted violently at 6.20 a.m. on 1 Apr 1917 and killed 4 people. Currently the world's tallest active geyser is the US National Parks' Service Steamboat Geyser, which from 1962 to 1969 erupted with intervals ranging from 5 days to 10 months to a height of 250-380 ft 76-115 m. The greatest measured water discharge has been 825,000 gal 37 850 hl by the Giant Geyser, also in Yellowstone National Park, Wyoming, which has been dormant since 1955. The *Geysir* ('gusher') near Mount Hekla in south-central Iceland, from which all others have been named, spurts, on occasions, to 180 ft 55 m, while the adjacent Strokkur, reactivated by drilling in 1963, spurts at 10-15-min intervals.

2. WEATHER

Guinness Superlatives Ltd. have published a more specialist volume entitled the *Guinness Book of Weather Facts and Feats* (2nd Edition) by Ingrid Holford (Price £8.95).

The meteorological records given below necessarily relate largely

to the last 140–160 years, since data before that time are both sparse and often unreliable. Reliable registering thermometers were introduced as recently as c. 1820. The longest continuous observations have been maintained at the Radcliffe Observatory, Oxford since 1815.

Palaeo-entomological evidence is that there was a southern European climate in England c. 90,000 BC, while in c. 6000 BC the mean summer temperature reached 67°F 19.4°C, or 6 deg F 3.3 deg C higher than the present. It is believed that 1.2 million years ago the world's air temperature averaged 95°F 35°C. The earliest authentic recording of British weather relates to the period 26 Aug–17 Sept 55 BC. The earliest reliably known hot summer was in AD 664 during our driest-ever century and the earliest known severe winter was that of AD 763–4. In 1683–4 there was frost in London from November to April. Frosts were recorded during August in the period 1668–89.

Most equable temperature

The location with the most equable recorded temperature over a short period is Garapan, on Saipan, in the Mariana Islands, Pacific Ocean. During the nine years from 1927 to 1935, inclusive, the lowest temperature recorded was 19.6°C 67.3°F on 30 Jan 1934 and the highest was 31.4°C 88.5°F on 9 Sept 1931, giving an extreme range of 11.8 deg C 21.2 deg F. Between 1911 and 1966 the Brazilian off-shore island of Fernando de Noronha had a minimum temperature of 18.6°C 65.5°F on 17 Nov 1913 and a maximum of 32.0°C 89.6°F on 2 Mar 1965, an extreme range of 13.4 deg C 24.1 deg F.

Greatest temperature ranges

The greatest recorded temperature ranges in the world are around the Siberian 'cold pole' in the eastern USSR. Temperatures in Verkhoyansk (67° 33' N, 133° 23' E) have ranged 192 deg F 106.7 deg C from –94°F –70°C (unofficial) to 98°F 36.7°C.

The greatest temperature variation recorded in a day is 100 deg F 55.5 deg C (a fall from 44°F 6.7°C to –56°F –48.8°C) at Browning, Montana, USA, on 23–24 Jan 1916. The most freakish rise was 49 deg F 27.2 deg C in 2 min at Spearfish, South Dakota, from –4°F –20°C at 7.30 a.m. to 45°F 7.2°C at 7.32 a.m. on 22 Jan 1943. The British record is 29 deg C 52.2 deg F (–7°C 19.4°F to 22°C 71.6°F) at Tummel Bridge, Tayside on 9 May 1978.

Longest freeze

The longest recorded unremitting freeze (maximum temperature 32°F 0°C and below) in the British Isles was one of 34 days at Moor House, Cumbria, from 23 Dec 1962 to 25 Jan 1963. This was almost certainly exceeded at the neighbouring Great

Dun Fell, where the screen temperature never rose above freezing during the whole of January 1963. Less rigorous early data includes a frost from 5 Dec 1607 to 14 Feb 1608 and a 91-day frost on Dartmoor, Devon in 1854–5. No temperature lower than 34°F 1°C has ever been recorded on Bishop Rock, Isles of Scilly.

Upper atmosphere

The lowest temperature ever recorded in the atmosphere is –143°C –225.4°F at an altitude of about 50–60 miles 80.5–96.5 km, during noctilucent cloud research above Kronogård, Sweden, from 27 July to 7 Aug 1963. A jet stream moving at 408 mph 656 km/h at 154,200 ft 47 000 m (29.2 miles 46 km) was recorded by Skua rocket above South Uist, Outer Hebrides, Scotland on 13 Dec 1967.

Most recent White Christmas and Frost Fair

London has experienced seven 'White' or snowing Christmas Days since 1900. These have been 1906, 1917 (slight), 1923 (slight), 1927, 1938, 1956 (slight) and 1970. These were more frequent in the 19th century and even more so before the change of the calendar, which, by removing 3–13 Sept brought forward all dates subsequent to 2 Sept 1752 by 11 days. The last of the nine recorded Frost Fairs held on the Thames since 1564/65 was from December 1813 to 26 Jan 1814.

Progressive extremes

The world's extremes of temperature have been noted progressively at the foot of the previous column.

Thickest Ice

The greatest recorded thickness of ice on the Earth's surface is 2.97 miles (15,670 ft) 4776 m measured by radio echo soundings from a U.S. Antarctic Research aircraft at 69° 9' 38" S 135° 20' 25" E in Wilkes Land on 4 Jan 1975.

Deepest Permafrost

The deepest recorded permafrost is more than 4500 ft 1370 m reported from the upper reaches of the Viluy River, Siberia, USSR in February 1982.

Most intense rainfall

Difficulties attend rainfall readings for very short periods but the figure of 1.50 in 38.1 mm in 1 min at Barst, Guadeloupe on

PROGRESSIVE RECORDINGS OF EXTREME HIGH TEMPERATURES WORLD WIDE

127.4°F	53.0°C	Ouargla, Algeria	27 Aug	1884
130°F	54.4°C	Amos, California, USA	17 Aug	1885
130°F	54.4°C	Mammoth Tank, California, USA	17 Aug	1885
134°F	56.7°C	Death Valley, California, USA	10 July	1913
136.4°F	58.0°C	Al'Aziziyah (el-Aziziyah), Libya*	13 Sept	1922

* Obtained by the US National Geographical Society but not officially recognised by the Libyan Ministry of Communications.

A reading of 140°F 60°C at Delta, Mexico, in August 1953 is not now accepted because of over-exposure to roof radiation. The official Mexican record of 136.4°F 58.0°C at San Luis, Sonora on 11 Aug 1933 is not internationally accepted.

A heat flash reported from Coimbra, Portugal, in September 1933 said to have caused the temperature to rise to 70°C 158°F for 120 sec is apocryphal.

PROGRESSIVE RECORDINGS OF EXTREME LOW TEMPERATURES WORLD WIDE

–70°F	–58.3°C	Floeberg Bay, Ellesmere I., Canada		1852
–68°F	–58°C	Verkhoyansk, Siberia, USSR	3 Jan	1885
–68°F	–58°C	Verkhoyansk, Siberia, USSR	5 & 7 Feb	1892
–68°F	–58°C	Oymyakon, Siberia, USSR	6 Feb	1933
–73.5°F	–53.5°C	South Pole, Antarctica	11 May	1957
–74.5°F	–53.5°C	South Pole, Antarctica	17 Sept	1957
–78.34°F	–55.7°C	Sovietskaya, Antarctica	2 May	1958
–80.7°F	–57°C	Vostok, Antarctica	15 June	1958
–81.2°F	–57.2°C	Sovietskaya, Antarctica	19 June	1958
–83.0°F	–58.3°C	Sovietskaya, Antarctica	25 June	1958
–85.7°F	–60.7°C	Vostok, Antarctica	7–8 Aug	1958
–86.7°F	–60.7°C	Sovietskaya, Antarctica	9 Aug	1958
–87.4°F	–61.3°C	Vostok, Antarctica	25 Aug	1958
–88.3°F	–61.3°C	Vostok, Antarctica	24 Aug	1960

Footnotes to table right

- The 100.5°F 38.6°C reported from Tonbridge, Kent was a non-standard exposure and is estimated to be equivalent of 97–98°F 36–36.7°C
- Vostok is 11,220 ft 3419 m above sea-level. The coldest permanently inhabited place is the Siberian village of Oymyakon (pop. 600) (63° 16' N, 143° 15' E), (2300 ft 700 m) in the USSR where the temperature reached –96°F –71.1°C in 1964.
- The –23°F –30.5°C at Blackadder, Borders, on 4 Dec 1879, and the –20°F –28.9°C at Grantown-on-Spey on 24 Feb 1955, were not standard exposures. The lowest official temperature in England is –15°F –26.1°C at Newport, Shropshire on 10 Jan 1982. The lowest maximum temperature for a day was –19.1°C –2.3°F at Braemar on 10 Jan 1982.
- This is equal to 7,435 tons 7554 tonnes of rain per acre. Elevation 1200 m 3937 ft.
- The record for Ireland is 145.4 in 3921 mm near Derrifarna Lough, County Kerry in 1948.
- The record for a single snow storm is 189 in 4800 mm at Mt. Shasta, Ski Bowl, California, and for 24 hr, 76 in 1930 mm at Silver Lake, Colorado, USA on 14–15 April 1921. The greatest depth of snow on the ground was 25 ft 5 in 7.74 m at Paradise on 17 Apr 1972. London's earliest recorded snow was on 25 Sept 1885, and the latest on 27 May 1821. Less reliable reports suggest snow on 12 Sept 1658 (Old Style) and on 12 June 1791.
- St Petersburg, Florida, USA, recorded 768 consecutive sunny days from 9 Feb 1967 to 17 March 1969.
- The south-eastern end of the village of Lochranza, Isle of Arran, Strathclyde is in shadow of mountains from 18 Nov to 8 Feb each winter.
- The USS Repose, a hospital ship, recorded 25.55 in 856 mb in the eye of a typhoon in 25° 35' N 128° 20' E off Okinawa on 16 Sept 1945.
- The highest speed yet measured in a tornado is 280 mph 450 km/h at Wichita Falls, Texas, USA on 2 Apr 1958.
- The figure of 177.2 mph 285.2 km/h at RAF Saxa Vord, Unst, in the Shetlands, Scotland, on 16 Feb 1962, was not recorded with standard equipment. There were gales of great severity on 15 Jan 1962 and 26 Nov 1970.
- Between Lat. 35° N. and 35° S. there are some 3200 thunderstorms each 12 night-time hours, some of which can be heard at a range of 18 miles 29 km.
- In Death Valley, California, USA, maximum temperatures of over 120°F 48.9°C were recorded on 43 consecutive days—6 July to 17 Aug 1917. At Marble Bar, Western Australia (maximum 121°F 49.4°C) 160 consecutive days with maximum temperatures of over 100°F 37.8°C were recorded—31 Oct 1923 to 7 Apr 1924 at Wyndham, Western Australia, the temperature reached 90°F 32.2°C or more on 333 days in 1946.
- The lowest rainfall recorded in a single year was 9.29 in 23.6 cm at one station in Margate, Kent in 1921.
- The longest drought in Scotland was one of 38 days at Port William, Dumfries & Galloway on 3 Apr to 10 May 1938.
- Much heavier hailstones are sometimes reported. These are usually not single but coalesced stones. An ice block of 1–2 kg 35–70 oz. was reputed at Withington, Manchester on 2 Apr 1973. The Canton Evening News reported on 14 Apr 1981 5 killed and 225 recently injured by a hailstorm with stones weighing up to 30 lb 13.6 kg (sic)
- Lower visibilities occur at higher altitudes. Ben Nevis is reputedly in cloud 300 days per year.

Weather Records

1. **HIGHEST SHADE TEMPERATURE:** World 136.4°F 58° C Al Azizyah, Libya, 13.9.1922 UK & Ireland 98°F <37°C Raunds, Northants, Epsom, Surrey and Canterbury, Kent 8.8.1911(a)

2. **LOWEST SCREEN TEMPERATURE:** World -128.9°F -88.3°C Vostok, Antarctica, 24.8.1960(b). UK & Ireland -17°F -27.2°C 11.2.1895 and -27.2°C -17°F 10.1.1962 both at Braemar, Grampian, Scotland

3. **GREATEST RAINFALL** (24 hours): World 73.62 in 1870 mm, Cilaos, La Réunion, Indian Ocean, 15-16.3.1952(d) UK & Ireland 11.00 in 279 mm, Martinstown, Dorset, 18-19.7.1955

4. **GREATEST RAINFALL** (Calendar Month): World 366.14 in 9299 mm, Cherrapunji, Meghalaya, India, July 1861 UK & Ireland 56.54 in 1436 mm, Llyn Llydau, Snowdon, Gwynedd, October 1909

GREATEST RAINFALL (12 months): World 1041.78 in 26461 mm, Cherrapunji, Meghalaya, 1.8.1860-31.7.1861 UK & Ireland 257.0 in 6527 mm, Sprinkling Tarn, Cumbria, in 1954(e)

5. **GREATEST SNOWFALL** (f) (12 months): World 1224.5 in 31102 mm, Paradise, Mt Rainier, Washington, USA 19.2.1971 to 18.2.1972 UK & Ireland 60 in 1524 mm, Upper Teesdale and Denbighshire Hills, Clwyd, Wales, 1947

6. **MAXIMUM SUNSHINE:**(g) World >97 per cent (over 4300 hours) eastern Sahara, annual average UK & Ireland 78.3 per cent (382 hours) Pendennis Castle, Falmouth, Cornwall, June 1925

7. **MINIMUM SUNSHINE:** World Nil at North Pole—for winter stretches of 186 days UK & Ireland Nil in a month at Westminster, London, in December 1890(h)

8. **BAROMETRIC PRESSURE** (Highest): World 1,083.8 mb. (32.00 in), Agata, Siberia, USSR (alt. 862 ft 262 m), 31.12.1968. UK & Ireland 1054.7 mb. (31.15 in), Aberdeen, 31.1.1902

9. **BAROMETRIC PRESSURE** (Lowest):(j) World 870 mb (25.69 in), 300 miles 482 km west of Guam, Pacific Ocean, in Lat. 16°44' N, Long. 137°46' E 12.10.1979 UK & Ireland 925.5 mb (27.33 in), Ochtertyre, near Crieff, Tayside, 26.1.1884

10. **HIGHEST SURFACE WIND-SPEED:**(k) World 231 mph 371 km/h, Mt. Washington (6288 ft 1916 m), New Hampshire, USA 12.4.1934 UK & Ireland 144 mph 231 km/h (125 knots), Coire Cas ski lift (3525 ft 1074 m), Cairn Gorm, Highland, 6.3.1967(l)

11. **THUNDER-DAYS** (Year):(m) World 322 days, Bogor (formerly Buitenzorg), Java, Indonesia (average, 1916-19) UK & Ireland 38 days, Stonyhurst, Lancashire, 1912 and Huddersfield, West Yorkshire, 1967

12. **HOTTEST PLACE** (Annual mean):(n) World Dallol, Ethiopia, 94°F 34.4°C (1960-66) UK & Ireland Penzance, Cornwall, and Isles of Scilly, both 52.7°F 11.5°C, average 1931-60

13. **COLDEST PLACE** (Extrapolated annual mean): World Polus Nedostupnosti, Pole of Cold (78° S., 96° E.), Antarctica, -72°F -57.8°C Coldest measured mean: -70°F -56.6°C Plateau Station, Antarctica UK & Ireland Dalwhinnie, Highland 43°F 6.1°C (alt. 1151 ft 351 m)

14. **WETTEST PLACE** (Annual mean): World Mt. Wai-ale-ale (5148 ft 1569 m), Kauai, Hawaii, 451 in 11455 mm (average 1920-72). In 1948 621 in 15773 mm UK & Ireland Styhead Tarn (1600 ft 487 m), Cumbria, 172.9 in 4391 mm

14. **MOST RAINY DAYS** (Year): World Mt. Wai-ale-ale up to 350 per annum UK & Ireland Ballynahinch, Galway, 309 days in 1923

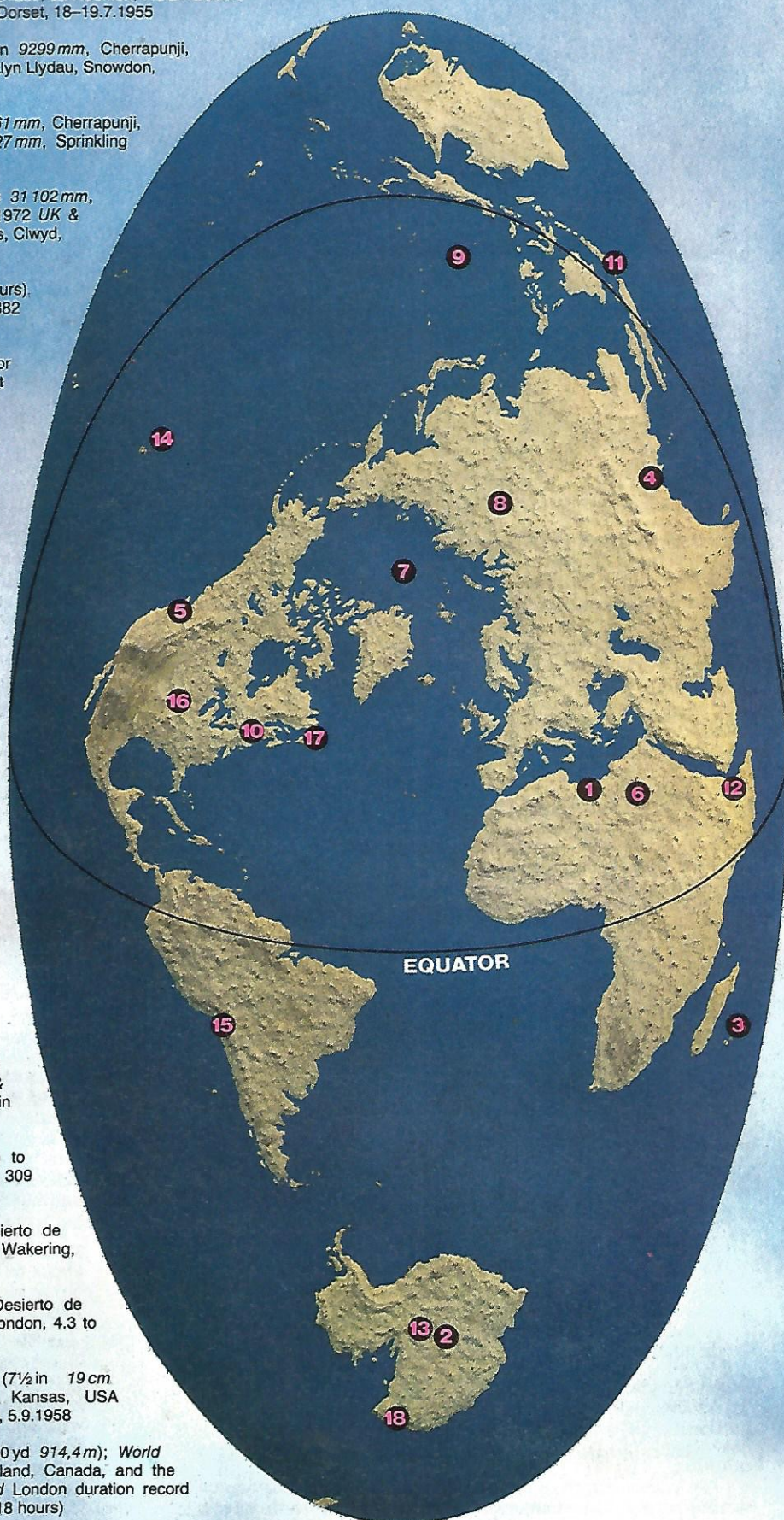
15. **DRIEST PLACE** (Annual mean): World Nil—in the Desierto de Atacama, near Calama, Chile UK & Ireland Great Wakering, Essex, 19.2 in 487 mm (1916-50)(o)

15. **LONGEST DROUGHT:** World c. 400 years to 1971, Desierto de Atacama, Chile UK & Ireland 73 days, Mile End, Greater London, 4.3 to 15.5 1893(p)

16. **HEAVIEST HAILSTONES:**(q) World 1.67 lb 750 g (7½ in 19 cm diameter, 17½ in 44.45 cm circumference), Coffeyville, Kansas, USA 3.9.1970 UK & Ireland 5 oz 141 g, Horsham, West Sussex, 5.9.1958

17. **LONGEST SEA LEVEL FOGS** (Visibility less than 1000 yd 914.4 m): World Fogs persist for weeks on the Grand Banks, Newfoundland, Canada, and the average is more than 120 days per year(r) UK & Ireland London duration record was 26.11 to 1.12.1948 and 5.12 to 9.12.1952 (both 4 days 18 hours)

18. **WINDIEST PLACE:** World The Commonwealth Bay, George V Coast, Antarctica, where gales reach 200 mph 320 km/h UK & Ireland Tiree, Strathclyde (89 ft 27 m); annual average 17.4 mph 28 km/h. Fair Isle (1974-78) returned 20.6 mph 33.1 km/h



The near perpendicular face of Half Dome, Yosemite, California, USA (see p. 69). (Philip Gooding)



areas of the Persian Gulf in summer. Ice-focused solar rays have been known to heat lake water to nearly 80°F $26,8^{\circ}\text{C}$. The normal Red Sea temperature is 22°C $71,6^{\circ}\text{F}$. The highest temperature recorded in the ocean is 662°F 350°C , measured by the research submersible *Alvin* at Lat. 21°N on the East Pacific Rise in November 1979, emanating from a sea-floor geothermal spring at a depth of 2600 m 8530 ft.

STRAITS

Longest

The longest straits in the world are the Tatarskiy Proliv or Tartar Straits between Sakhalin Island and the USSR mainland running from the Sea of Japan to Sakhalinsky Zaliv. This distance is 800 km 497 miles—thus marginally longer than the Malacca Straits.

Broadest

The broadest named straits in the world are the Davis Straits

Structure and Dimensions

between Greenland and Baffin Island with a minimum width of 210 miles 338 km. The Drake Passage between the Diego Ramirez Islands, Chile and the South Shetland Islands is 710 miles 1140 km across.

Narrowest

The narrowest navigable straits are those between the Aegean island of Euboea and the mainland of Greece. The gap is only 45 yd 40 m wide at Khalkis. The Seil Sound, Strathclyde, Scotland, narrows to a point only 20 ft 6 m wide where the Clachan bridge joins the island of Seil to the mainland and is thus said by the islanders to span the Atlantic.

WAVES

Highest

The highest officially recorded sea wave was measured by Lt Frederic Margraff USN from the USS *Ramapo* proceeding from Manila, Philippines, to San Diego, California, USA, on the night of 6–7 Feb 1933, during a 68-knot (78.3 mph 126 km/h) hurricane. The wave was computed to be 112 ft 34 m from trough to crest. The highest instrumentally measured wave was one 86 ft 26,2 m high, recorded by the British ship *Weather Reporter*, in the North Atlantic on 30 Dec 1972 in Lat. 59°N , Long. 19°W . It has been calculated on the statistics of the Stationary Random Theory that one wave in more than 300,000 may exceed the average by a factor of 4.

On 9 July 1958 a landslip caused a wave to wash 1740 ft 530 m high along the fjord-like Lituya Bay, Alaska, USA.

Highest seismic wave

The highest estimated height of a *tsunami* (often wrongly called a tidal wave) was one of 85 m 278 ft, which appeared off Ishigaki Island, Ryukyu Chain on 24 Apr 1971. It tossed a 750 ton block of coral more than 2,5 km 1.3 miles. *Tsunami* (a Japanese word meaning *nami*, a wave; *tsu*, overflowing) have been observed to travel at 490 mph 790 km/h. Between 479 BC and 1977 there were at least 500 instances of *tsunami* of which 270 were destructive.

CURRENTS

Greatest

The greatest current in the oceans of the world is the Antarctic Circumpolar Current or West Wind Drift Current which was measured in 1969 in the Drake Passage between South America and Antarctica to be flowing at a rate of 9500 million ft^3 270 000 000 m^3 per sec—nearly treble that of the Gulf Stream. Its width ranges from 185 to 1240 miles 300–2000 km and has a proven surface flow rate of $\frac{4}{10}$ of a knot 0,75 km/h.

Strongest

The world's strongest currents are the Nakwakto Rapids, Slingsby Channel, British Columbia, Canada (Lat. $51^{\circ} 05' \text{N}$,

The road to the observatory near the summit of Mauna Kea, the world's largest mountain. The mountain rises from a base 19 685 ft 6000 m below the sea. (see p. 69). (Alex Hansen)



Long. 127° 30' W) where the flow rate may reach 16.0 knots 29.6 km/h. The fastest current in British territorial waters is 10.7 knots 19.8 km/h in the Pentland Firth between the Orkney Islands and Caithness, formerly Scotland's northern-most mainland county.

GREATEST TIDES

Extreme tides are due to lunar and solar gravitational forces affected by their perigee, perihelion and conjunctions. Barometric and wind effects can superimpose an added 'surge' element. Coastal and sea-floor configurations can accentuate these forces.

World

The greatest tides in the world occur in the Bay of Fundy, which divides the peninsula of Nova Scotia, Canada, from the United States' north-easternmost state of Maine and the Canadian province of New Brunswick. Burncoat Head in the Minas Basin, Nova Scotia, has the greatest mean spring range with 47.5 ft 14.50 m and an extreme range of 53.5 ft 16.30 m.

Great Britain

The place with the greatest mean spring range in Great Britain is Beachley, on the Severn, with a range of 40.7 ft 12.40 m, compared with the British Isles' average of 15 ft 4.57 m. Prior to 1933 tides as high as 28.9 ft 8.80 m above and 22.3 ft 6.80 m below datum (total range 51.2 ft 15.60 m) were recorded at Avonmouth though an extreme range of 52.2 ft 15.90 m for Beachley was officially accepted. In 1883 a freak tide of greater range was reported from Chepstow, Gwent.

Ireland

The greatest mean spring tidal range in Ireland is 17.3 ft 5.27 m at Mellon, Limerick, on the River Shannon.

ICEBERGS

Largest

The largest iceberg on record was an Antarctic tabular 'berg' of over 12,000 miles² 31 000 km² (208 miles 335 km long and 60 miles 97 km wide and thus larger than Belgium) sighted 150 miles 240 km west of Scott Island, in the South Pacific Ocean, by the USS *Glacier* on 12 Nov 1956. The 200 ft 61 m thick Arctic ice island T.1 (140 miles² 360 km²) (discovered in 1946) was tracked for 17 years. The tallest iceberg measured was one of 550 ft 167 m reported off western Greenland by the US icebreaker *East Wind* in 1958.

Most southerly Arctic

The most southerly Arctic iceberg was sighted in the Atlantic by a USN weather patrol in Lat. 28° 44' N, Long. 48° 42' W in April 1935. The southernmost iceberg reported in British home waters was one sighted 60 miles 96 km from Smith's Knoll, on the Dogger Bank, in the North Sea.

Most northerly Antarctic

The most northerly Antarctic iceberg was a remnant sighted in the Atlantic by the ship *Dochra* in Lat. 26° 30' S, Long. 25° 40' W, on 30 Apr 1894.

LAND

There is satisfactory evidence that at one time the Earth's land surface comprised a single primeval continent of 80 million miles² 2×10^8 km², now termed Pangaea, and that this split about 190 million years ago, during the Jurassic period, into two super-continent, termed Laurasia (Eurasia, Greenland and Northern America) and Gondwanaland (Africa, Arabia, India, South America, Oceania and Antarctica) and named after Gondwana, India, which itself split 120 million years ago. The South Pole was apparently in the area of the Sahara as recently as the Ordovician period of c. 450 million years ago.

ROCKS

The age of the Earth is generally considered to be within the range of 4600 ± 100 million years, by analogy with directly measured ages of meteorites and of the moon. However, no rocks of this great age have yet been found on the Earth since geological processes have presumably destroyed the earliest record.

Oldest World

The greatest reported age for any scientifically dated rock is 3800 ± 100 million years for granite gneiss rock found near

Granite Falls in the Minnesota river valley, USA as measured by the lead-isotope and rubidium-uranium methods by the US Geological Survey and announced on 26 Jan 1975. These metamorphic samples compare with the Amitsoq gneiss from Godthaab, Greenland unreservedly accepted to be between 3700 and 3750 million years.

Oldest Great Britain

The original volcanic products from which were formed the gneiss and granulite rocks of the Scourian complex in the north west Highlands and the Western Isles may be possibly older than 3000 million years. They were crystallized 2800 million years ago.

Largest

The largest isolated monolith in the world is the 1237 ft 377 m high Mount Augustus (3627 ft 1105 m above sea-level), discovered on 3 June 1858, 200 miles 320 km east of Carnarvon, Western Australia. It is an upfaulted monoclinical gritty conglomerate 5 miles 8 km long and 2 miles 3 km across and thus twice the size of the celebrated monolithic arkose Ayer's Rock (1100 ft 335 m), 250 miles 400 km south-west of Alice Springs, in Northern Territory, Australia.

CONTINENTS

Largest

Only 29.08 per cent, or an estimated 57,270,000 miles² 148 328 000 km² of the Earth's surface is land, with a mean height of 2480 ft 756 m above sea-level. The Eurasian land mass is the largest, with an area (including islands) of 20,733,000 miles² 53 698 000 km². The Afro-Eurasian land mass, separated artificially only by the Suez Canal covers an area of 32,233,000 miles² 83 483 000 km² or 56.2% of the Earth's landmass.

Smallest

The smallest is the Australian mainland, with an area of 2,941,526 miles² 7 618 493 km², which, together with Tasmania, New Zealand, New Guinea and the Pacific Islands, is described sometimes as Oceania.

Land remotest from the sea World

There is an as yet unpinpointed spot in the Dzoosotoyn Elisen (desert), northern Xinjiang Uygur Zizhiqu (Sin Kiang), China's most north westerly province, that is more than 1500 miles 2400 km from the open sea in any direction. The nearest large city to this point is Ürümqi (Ürümchi) to its south.

Land remotest from the sea Great Britain

The point furthest from the sea in Great Britain is a point near Meriden, West Midlands, England, which is 72½ miles 117 km equidistant from the Severn Bridge, the Dee and Mersey estuaries and the Welland estuary in the Wash. The equivalent point in Scotland is in the Forest of Atholl, north-west Tayside 40½ miles 65 km equidistant from the head of Loch Leven, Inverness Firth and the Firth of Tay.

Peninsula

The world's largest peninsula is Arabia, with an area of about 1,250,000 miles² 3 250 000 km².

ISLANDS

Largest World

Discounting Australia, which is usually regarded as a continental land mass, the largest island in the world is Greenland (renamed Kalaatdlit Nunaat 1 May 1979), with an area of about 840,000 miles² 2 175 000 km². There is evidence that Greenland is in fact several islands overlaid by an ice cap without which it would have an area of 650,000 miles² 1 680 000 km².

Largest Great Britain

The mainland of Great Britain (Scotland, England and Wales) is the eighth largest in the world, with an area of 84,186 miles² 218 041 km². It stretches 603½ miles 971 km from Dunnet Head in the north to Lizard Point in the south and 287½ miles 463 km across from Porthafod, Dyfed to Lowestoft, Suffolk. The island of Ireland (32,594 miles² 84 418 km²) is the 20th largest in the world.

Freshwater

The largest island surrounded by fresh water is the Ilha de

Marajó (13,500 miles² 35,000 km²), in the mouth of the River Amazon, Brazil. The world's largest inland island (i.e. land surrounded by rivers) is Ilha do Bananal, Brazil (7000 miles² 18,130 km²). The largest island in a lake is Manitoulin Island (1068 miles² 2766 km²) in the Canadian (Ontario) section of Lake Huron. The largest lake island in Great Britain is Inchmurrin in Loch Lomond, Strathclyde/Central, Scotland with an area of 284 acres 115 ha.

Remotest World uninhabited

The remotest island in the world is Bouvet Øya (formerly Liverpool Island), discovered in the South Atlantic by J. B. C. Bouvet de Lozier on 1 Jan 1739, and first landed on by Capt. George Norris on 16 Dec 1825. Its position is 54° 26' S, 3° 24' E. This uninhabited Norwegian dependency is about 1050 miles 1700 km from the nearest land—the uninhabited Queen Maud Land coast of eastern Antarctica.

Remotest World inhabited

The remotest inhabited island in the world is Tristan da Cunha, discovered in the South Atlantic by Tristão da Cunha, a Portuguese admiral, in March 1506. It has an area of 38 miles² 98 km² habitable area 12 miles² 31 km² and was annexed by the United Kingdom on 14 Aug 1816. After evacuation in 1961 (due to volcanic activity), 198 islanders returned in November 1963. The nearest inhabited land is the island of St Helena, 1320 miles 2120 km to the north-east. The nearest continent, Africa is 1700 miles 2735 km away.

Remotest Great Britain

The remotest of the British islets is Rockall 191 miles 307 km west of St Kilda, Western Isles. This 70 ft 21 m high rock measuring 83 ft 25 m across was not formally annexed until 18 Sept 1955. The remotest British island which has ever been inhabited is North Rona which is 44 miles 70.8 km from the next nearest land at Cape Wrath and the Butt of Lewis. It was evacuated c. 1844. Muckle Flugga, off Unst, in the Shetlands, is the northernmost inhabited with a population of 3 (1971) and is in a latitude north of southern Greenland. Just to the north of it is the rock of Out Stack.

Highest Rock Pinnacle

The world's highest rock pinnacle is Ball's Pyramid near Lord Howe Island, Pacific which is 1843 ft 561 m high, but has a base area of only 200 m 220 yd. It was first scaled in 1965.

Northernmost land

On 26 July 1978 Uffe Petersen of the Danish Geodetic Institute observed the islet of Oodaaq Ø 30 m 100 ft across, 1.36 km 1487 yd north of Kaffeklubben Ø off Pearyland, Greenland in Lat. 83° 40' 32.5" N, Long. 30° 40' 10.1" W. The island is 706.4 km 438.9 miles from the North Pole.

Southernmost land

The South Pole, unlike the North Pole, is on land. The Amundsen-Scott South Polar station was built there at an altitude of 9370 ft 2855 m in 1957. It is drifting bodily with the ice cap 27–30 ft 8–9 m per annum in the direction 43° W and was replaced by a new structure in 1975.

Greatest archipelago

The world's greatest archipelago is the 3500 mile 5600 km long crescent of more than 13,000 islands which forms Indonesia.

Newest

The world's newest island, Lateiki Island which appeared after a volcanic eruption was annexed by Tonga in June 1979.

Largest atoll

The largest atoll in the world is Kwajalein in the Marshall Islands, in the central Pacific Ocean. Its slender 176 mile 283 km long coral reef encloses a lagoon of 1100 miles² 2850 km². The atoll with the largest land area is Christmas Atoll, in the Line Islands, in the central Pacific Ocean. It has an area of 248 miles² 640 km² of which 125 miles² 323 km² is land. Its principal settlement, London, is only 2½ miles 4.0 km distant from Paris.

Longest reef

The longest reef is the Great Barrier Reef off Queensland, north-eastern Australia, which is 1260 statute miles 2027 km in length.

Between 1959 and 1971 a large section between Cooktown and Townsville was destroyed by the proliferation of the Crown of Thorns starfish (*Acanthaster planci*).

DEPRESSIONS

Deepest World

The deepest depression so far discovered is beneath the Hollick-Kenyon Plateau in Marie Byrd Land, Antarctica, where, at a point 5900 ft 1800 m above sea-level, the ice depth is 14,000 ft 4267 m, hence indicating a bed rock depression 8100 ft 2468 m below sea-level. The greatest submarine depression is a large area of the floor of the north-west Pacific which has an average depth of 15,000 ft 4570 m. The deepest exposed depression on land is the shore surrounding the Dead Sea, 1291 ft 393 m below sea-level. The deepest point on the bed of this lake is 2600 ft 792 m below the Mediterranean. The deepest part of the bed of Lake Baykal in Siberia, USSR, is 4872 ft 1484 m below sea-level.

Deepest Great Britain

The lowest lying area in Great Britain is in the Holme Fen area of the Great Ouse, in Cambridgeshire, at 9 ft 2.75 m below sea-level. The deepest depression in England is the bed of part of Windermere, 94 ft 28.65 m below sea-level, and in Scotland the bed of Loch Morar, Highland 987 ft 300.8 m below sea-level.

Largest

The largest exposed depression in the world is the Caspian Sea basin in the Azerbaydzhani, Russian, Kazakh and Turkmen Republics of the USSR and northern Iran (Persia). It is more than 200,000 miles² 518 000 km² of which 143,550 miles² 371 800 km² is lake area. The preponderant land area of the depression is the Prikaspiyskaya Nizmennost', lying around the northern third of the lake and stretching inland for a distance of up to 280 miles 450 km.

CAVES

Longest

The most extensive cave system in the world is that under the Mammoth Cave National Park, Kentucky, USA first discovered in 1799. On 9 Sept 1972 an exploration group led by Dr John P. Wilcox completed a connection, pioneered by Mrs Patricia Crowther on 30 Aug between the Flint Ridge Cave system and the Mammoth Cave system, so making a combined system with a total mapped passageway length of 361.6 km 224.7 miles. The longest cave system in Great Britain is the Easegill system which reached 46.3 km 28.8 miles with the connection of Easegill Caverns, Cumbria with Pippikin Pot, Lancashire on 16 Dec 1978.

Largest cavern

The world's largest cave chamber is the Sarawak Chamber, Lobang Nasip Bagus, in the Gunung Mulu National Park, Sarawak discovered and surveyed by the 1980 British-Malaysian Mulu Expedition. Its length is 700 m 2300 ft; and its average width is 300 m 980 ft and it is nowhere less than 70 m 230 ft high. Wembley Stadium would fit into one end.

Longest stalactite

The longest known stalactite in the world is a wall-supported column extending 195 ft 59 m from roof to floor in the Cueva de Nerja, near Málaga, Spain. Probably the longest free-hanging stalactite is one of 7 m 23 ft in the Poll an Ionain cave in County Clare, Ireland. The tallest cave column is the 106 ft 32.3 m tall Bicentennial Column in Ogle Cave in Carlsbad Cavern National Park, New Mexico USA.

DEEPEST CAVES BY COUNTRIES

These depths are subject to continuous revisions.

m	Depth		
	Ft		
1490	4888	Gouffre Jean Bernard	France
1338	4390	Sima de Las Puertas de Illamina	Spain
1280	4199	Snezhnaya, Caucasus	USSR
1240	4068	Sistema Huautla	Mexico
1175	3855	Mammuthöhle	Austria
950	3117	Antro di Corchia	Italy
850	2821	Reseau de Siebenhengste	Switzerland
800	2625	Anou Bousouil	Algeria
783	2569	Jaskini Snieznej, Tatras	Poland
765	2510	Brezno pri Gamsovi Glavici	Yugoslavia
751	2464	Ghar Parau, Zagros	Iran
700	2296	Kef Toghobeit	Morocco
308	1010	Ogof Ffynnon Ddu	Wales
214	702	Giant's Hole System	

Tallest stalagmite

The tallest known stalagmite in the world is La Grande Stalagmite in the Aven Armand cave, Lozère, France, which has attained a height of 98 ft 29 m from the cave floor. It was found in September 1897.

Glacial pothole

The largest known glacial pothole is one 30 ft 9 m in diameter and 50 ft 15.2 m deep near Bloomingdale, Ontario, Canada.

MOUNTAINS

The Guinness Book of Mountains and Mountaineering Facts and Feats by Edward Pyatt (£8.95) was published in May 1980.

Highest World

An eastern Himalayan peak of 29,028 ft 8848 m above sea-level on the Tibet-Nepal border (in an area first designated Chu-mu-lung-ma on a map of 1717) was discovered to be the world's highest mountain in 1852 by the Survey Department of the Government of India, from theodolite readings taken in 1849 and 1850. In 1860 its height was computed to be 29,002 ft 8840 m. On 25 July 1973 the Chinese announced a height of 8848.1 m or 29,029 ft 3 in. In practice the altitude can only be justified as 29,028 ft $\pm$ 25 feet or a mean 8848 m. The 5½ mile 8.85 km high peak was named Mount Everest after Sir George Everest, CB. (1790-1866), formerly Surveyor-General of India. Other names for Everest are: Sagarmatha (Nepalese); Qomolongma (Chinese) and Mi-ti Gu-ti Cha-pu Long-na (Tibetan). After a total loss of 11 lives since the first reconnaissance in 1921, Everest was finally conquered at 11.30 a.m. on 29 May 1953. (For details of ascents, see under Mountaineering in Chapter 12.) The mountain whose summit is farthest from the Earth's centre is the Andean peak of Chimborazo (20,561 ft 6267 m), 98 miles 158 km south of the equator in Ecuador, South America. Its summit is 7057 ft 2150 m further from the Earth's centre than the summit of Mt Everest. The highest mountain on the equator is Volcán Cayambe (19,285 ft 5878 m), Ecuador, in Long. 77° 58' W.

Highest Insular

The highest insular mountain in the world is the unsurveyed Nggá Pulu formerly Mount Sukarno, formerly Carstensz Pyramide in Irian Jaya, Indonesia, once Netherlands New Guinea. According to cross-checked altimeter estimates, it is 16,500 ft 5030 m high.

Steepest Slope

Mount Rakaposhi (25,498 ft 7772 m) rises 5.99 vertical kilometres 19,652 ft from the Hunza Valley, Pakistan in 10 horizontal kilometres 32,808 ft with an overall gradient of 31°.

Highest UK and Ireland

A list of the highest points in the 72 geographical divisions of the United Kingdom and the 26 counties of the Republic of Ireland was given on page 63 of the 23rd (1977) Edition.

The highest mountain in the United Kingdom is Ben Nevis (4406 ft 1343 m excluding the 12 ft 3.65 m cairn), 4¼ miles 6.85 km south-east of Fort William, Highland, Scotland. It was climbed before 1720 but though acclaimed the highest in 1790 was not confirmed to be higher than Ben Macdhui (4300 ft 1310 m) until 1847. In 1834 Ben Macdhui and Ben Nevis (Gaelic, *Beinn Nibheis*) (first reference, 1778) were respectively quoted as 4570 ft 1393 m and 4370 ft 1332 m. The highest mountain in England is Scafell Pike (3210 ft 978 m) in Cumbria; in Wales is Snowdon (*Yr Wyddfa*) (3560 ft 1085 m) in Gwynedd; and in the island of Ireland is Carrauntual (3414 ft 1041 m) in County Kerry.

There is some evidence that, before being ground down by the ice-cap, mountains in the Loch Bà area of the Isle of Mull, Strathclyde were 15,000 ft 4575 m above sea-level.

Highest Peaks over 3000 ft 915 m

There are 577 peaks and tops over 3000 ft 915 m in the whole British Isles and 165 peaks and 136 tops in Scotland higher than England's highest point, Scafell Pike. The highest mountain off the mainland is Sgùrr Alasdair (3309 ft 1008 m) on Skye named after Alexander (Gaelic, *Alasdair*) Nicolson, who made the first ascent in 1873.

Highest unclimbed

The highest unclimbed mountain is now only the 31st highest—

Zemu Gap Peak (25,526 ft 7780 m) in the Sikkim Himalaya.

Largest

The world's tallest mountain measured from its submarine base (3280 fathoms 6000 m) in the Hawaiian Trough to peak is Mauna Kea (Mountain White) on the island of Hawaii, with a combined height of 33,476 ft 10023 m of which 13,796 ft 4205 m are above sea-level. Another mountain whose dimensions, but not height, exceed those of Mount Everest is the volcanic Hawaiian peak of Mauna Loa (Mountain Long) at 13,680 ft 4170 m. The axes of its elliptical base, 16,322 ft 4975 m below sea-level, have been estimated at 74 miles 119 m and 53 miles 85 km. It should be noted that Cerro Aconcagua (22,834 ft 6960 m) is more than 38,800 ft 11826 m above the 16,000 ft 4875 m deep Pacific abyssal plain or 42,834 ft 13055 m above the Peru-Chile Trench which is 180 miles 290 km distant in the South Pacific.

Greatest ranges

The world's greatest land mountain range is the Himalaya-Karakoram, which contains 96 of the world's 109 peaks of over 24,000 ft 7315 m. The greatest of all mountain ranges is, however, the submarine Indian/East Pacific Oceans Cordillera extending 19,200 miles 30 720 km from the Gulf of Aden to the Gulf of California by way of the seabed between Australia and Antarctica with an average height of 8000 ft 2430 km above the base ocean depth.

Longest lines of sight

Vatnajökull (6952 ft 2118 m), Iceland has been seen by refracted light from the Faeroe Islands 340 miles 550 km distant. In Alaska Mt McKinley (20,320 ft 6193 m) has been sighted from Mt Sanford (16,237 ft 4949 m) from a distance of 230 miles 370 km. McKinley, so named in 1896, was called Denali (Great One) in the Athabascan language.

Greatest plateau

The most extensive high plateau in the world is the Tibetan Plateau in Central Asia. The average altitude is 16,000 ft 4875 m and the area is 77,000 miles² 200 000 km².

Sheerest wall

The 3200 ft 975 m wide northwest face of Half Dome, Yosemite, California, USA is 2200 ft 670 m high but nowhere departs more than 7 degrees from the vertical. It was first climbed (Class VI) in 5 days in July 1957 by Royal Robbins, Jerry Gallwas and Mike Sherrick.

Highest halites

Along the northern shores of the Gulf of Mexico for 725 miles 1160 km there exists 330 subterranean 'mountains' of salt, some of which rise more than 60,000 ft 18 300 m from bed rock and appear as the low salt domes first discovered in 1862.

Lowest hill

The official map of Seria, Brunei shows a hillock named Bukit Thompson on the Padang Golf Course at 15 ft 4.5 m.

LAKES AND INLAND SEAS**Largest World**

The largest inland sea or lake in the world is the Kaspiskoye More (Caspian Sea) in the southern USSR and Iran (Persia). It is 760 miles 1225 km long and its total area is 143,550 miles² 371 800 km². Of the total area some 55,280 miles² 143 200 km² (38.6 per cent) is in Iran, where it is named the Darya-ye-Khazar. Its maximum depth is 1025 m 3360 ft and its surface is 28.5 m 93 ft below sea-level. Its estimated volume is 21,500 miles³ 89 600 km³ of saline water. Its surface has varied between 32 m 105 ft (11th century) and 22 m 72 ft (early 19th century) below sea level. The USSR Government plan to reverse the flow of the upper Pechora River from flowing north to the Barents Sea by blasting a 70 mile 112 km long canal with nuclear explosives into the south-flowing Kolva river so that *via* the Kama and Volga rivers the Caspian will be replenished.

Lake in a lake

The largest lake in a lake is Manitou Lake (41.09 miles² 106.42 km²) on the world's largest lake island Manitoulin Island (1068 miles² 2766 km²) in the Canadian part of Lake Huron. It contains itself a number of islands.

Underground lake

Reputedly the world's largest underground lake is the Lost Sea 300 ft 91 m subterranean in the Craighead Caverns, Sweetwater, Tennessee, USA measuring $4\frac{1}{2}$ acres 1.8 ha and discovered in 1905.

Freshwater Lake World

The freshwater lake with the greatest surface area is Lake Superior, one of the Great Lakes of North America. The total area is 31,800 miles² 82 350 km², of which 20,700 miles² 53 600 km² are in Minnesota, Wisconsin and Michigan, USA and 11,100 miles² 27 750 km² in Ontario, Canada. It is 600 ft 182 m above sea-level. The freshwater lake with the greatest volume is Baykal (see p. 68 and below) with an estimated volume of 5520 miles³ 23 000 km³.

Freshwater lake United Kingdom

The largest lake in the United Kingdom is Lough Neagh (48 ft 14.60 m above sea-level) in Northern Ireland. It is 18 miles 28.9 km long and 11 miles 17.7 km wide and has an area of 147.39 miles² 381.73 km². Its extreme depth is 102 ft 31 m.

Freshwater lakes or lochs Great Britain

The largest lake in Great Britain, and the largest inland loch in Scotland is Loch Lomond (23 ft 7.0 m above sea-level), which is 22.64 miles 36.44 km long and has a surface area of 27.45 miles² 70.04 km². It is situated in the Strathclyde and Central regions and its greatest depth is 623 ft 190 m. The lake or loch with the greatest volume is however Loch Ness with 263,162,000,000 ft³ 7 451 920 000 m³. The longest lake or loch is Loch Ness which measures 24.23 miles 38.99 km. The three arms of the Y-shaped Loch Awe aggregate, however, 25.47 miles 40.99 km. The largest lake in England is Windermere, in the county of Cumbria. It is 10½ miles 17 km long and has a surface area of 5.69 miles² 14.74 km². Its greatest depth is 219 ft 66.75 m in the northern half. The largest natural lake in Wales is Llyn Tegid, with an area of 1.69 miles² 4.38 km², although it should be noted that the largest lake in Wales is that formed by the reservoir at Lake Vyrnwy, where the total surface area is 1120 acres 453.25 ha.

Freshwater lakes or loughs Republic of Ireland

The largest lough in the Republic of Ireland is Lough Corrib in the counties of Mayo and Galway. It measures 27 miles 43.5 km in length and is 7 miles 11.25 km across at its widest point with a total surface area of 41,616 acres (65.0 miles² 168 km²).

Largest Lagoon

The largest lagoon in the world is Lagoa dos Patos in southernmost Brazil. It is 158 miles 254 km long and extends over 4110 miles² 10 645 km².

Deepest World

The deepest lake in the world is Ozero (Lake) Baykal in central Siberia, USSR. It is 385 miles 620 km long and between 20 and 46 miles 32–74 km wide. In 1957 the lake's Olkhon Crevice was measured to be 1940 m 6365 ft deep and hence 1485 m 4872 ft below sea-level (see pp. 67 and 69).

Deepest Great Britain

The deepest lake in Great Britain is the 10.30 mile 16.57 km long Loch Morar, in Highland. Its surface is 30 ft 9 m above sea-level and its extreme depth 1017 ft 310 m. England's deepest lake is West Water (258 ft 78 m), in Cumbria. The lake with the greatest mean depth is Loch Ness with c. 450 ft 137 m.

Highest World

The highest steam-navigated lake in the world is Lago Titicaca (maximum depth 1214 ft 370 m), with an area of about 3200 miles² 8285 km² (1850 miles² 4790 km² in Peru, 1350 miles² 3495 km² in Bolivia), in South America. It is 130 miles 209 km long and is situated at 12,506 ft 3811 m above sea-level. There is an unnamed glacial lake near Everest at 19,300 ft 5880 m. Tibet's largest lake Nam Tso of 722 miles² 1956 km² is at 15,060 ft 4578 m.

Highest United Kingdom

The highest lake in the United Kingdom is the 1.9 acre 0.76 ha Lochan Buidhe at 3600 ft 1097 m above sea-level in the Cairngorm Mountains, Scotland. England's highest is Broad

Crag Tarn (2746 ft 837 m above sea-level) on Scafell Pike, Cumbria and the highest named freshwater in Wales is The Frogs Pool, a tarn near the summit of Carnedd Llywelyn, Gwynedd at c. 2725 ft 830 m.

Desert Largest

Nearly an eighth of the world's land surface is arid with a rainfall of less than 25 cm 9.8 in per annum. The Sahara in N. Africa is the largest in the world. At its greatest length it is 3200 miles 5150 km from east to west. From north to south it is between 800 and 1400 miles 1275 and 2250 km. The area covered by the desert is about 3,250,000 miles² 8 400 000 km². The land level varies from 436 ft 132 m below sea-level in the Qattara Depression, Egypt, to the mountain Emi Koussi (11,204 ft 3415 m) in Chad. The diurnal temperature range in the western Sahara may be more than 80° F or 45° C.

Sand dunes

The world's highest measured sand dunes are those in the Saharan sand sea of Isaouane-n-Tifernine of east central Algeria in Lat. 26° 42' N, Long. 6° 43' E. They have a wave-length of near 3 miles 5 km and attain a height of 1410 ft 430 m.

Gorge Largest

The largest land gorge in the world is the Grand Canyon on the Colorado River in north-central Arizona, USA. It extends from Marble Gorge to the Grand Wash Cliffs, over a distance of 217 miles 349 km. It varies in width from 4 to 13 miles 6–20 km and is some 5300 ft 1615 m deep. The submarine Labrador Basin canyon is c. 2150 miles 3440 km long.

Gorge Deepest

The deepest canyon in low relief territory is Hell's Canyon, dividing Oregon and Idaho, USA. It plunges 7900 ft 2400 m from the Devil Mountain down to the Snake River. A stretch of the Kali River in central Nepal flows 18,000 ft 5485 m below its flanking summits of the Dhaulagiri and Annapurna groups. The deepest submarine canyon yet discovered is one 25 miles 40 km south of Esperance, Western Australia, which is 6000 ft 1800 m deep and 20 miles 32 km wide.

Sea cliffs Highest

The highest sea cliffs yet pinpointed anywhere in the world are those on the north coast of east Moloka'i, Hawaii near Umilehi Point, which descend 3300 ft 1005 m to the sea at an average gradient of >55°. The highest cliffs in North West Europe are those on the north coast of Achill Island, in County Mayo, Ireland, which are 2192 ft 668 m sheer above the sea at Croaghan. The highest cliffs in the United Kingdom are the 1300 ft 396 m Cona-chair cliffs on St Kilda, Western Isles (1379 ft 425 m). The highest sheer sea cliffs on the mainland of Great Britain are at Clo Mor, 3 miles 4.8 km south-east of Cape Wrath, Highland, Scotland which drop 921 ft 280.7 m. England's highest cliff (gradient > 45°) is Great Hangman Hill, near Combe Martin, in North Devon, which descends from 1043 ft 318 m to the sea in 984 ft 300 m, the last 700 ft 213 m of which is sheer.

Natural arch Longest

The longest natural arch in the world is the Landscape Arch in the Arches National Park, 25 miles 40 km north of Moab, Utah, USA. This natural sandstone arch spans 291 ft 88 m and is set about 100 ft 30 m above the canyon floor. In one place erosion has narrowed its section to 6 ft 1.82 m. Larger, however, is the Rainbow Bridge, Utah discovered on 14 Aug 1909 with a span of 278 ft 84.7 m but more than 22 ft 6.7 m wide.

Natural bridge Highest

The highest natural arch is the sandstone arch 25 miles 40 km WNW of K'ashih, Sinkiang, China, estimated in 1947 to be nearly 1000 ft 312 m tall with a span of about 150 ft 45 m.

Longest glaciers

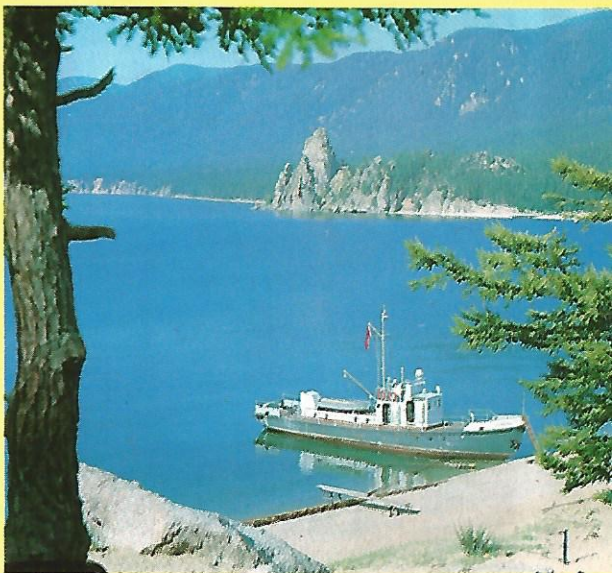
It is estimated that 6,020,000 miles² 15 600 000 km², or about 10.4 per cent of the Earth's land surface, is permanently glaciated. The world's longest known glacier is the Lambert Glacier, discovered by an Australian aircraft crew in Australian Antarctic Territory in 1956–7. It is up to 40 miles 64 km wide and, with its upper section, known as the Mellor Glacier, it measures at least 250 miles 402 km in length. With the Fisher Glacier limb, the Lambert forms a continuous ice passage about 320 miles 514 km



above: The greatest gorge in the world, the Grand Canyon, viewed from Yavapai Point (see p. 70). Though first recorded in 1540 its walls contain evidence of many pre-historic cliff dwellings. (Heather Angel)

above right: Angel Falls in Venezuela, the world's highest waterfall with a total drop of 3212 ft 979 m. There are other immensely high waterfalls in the area which are still unnamed. (David F. Hoy)

right: The deepest and the most voluminous freshwater lake in the world Lake Baykal in Siberia, USSR (see pp. 68 & 70). (Novosti Press)



long. The longest Himalayan glacier is the Siachen (47 miles 75.6 km) in the Karakoram range, though the Hispar and Biafo combine to form an ice passage 76 miles 122 km long. The fastest moving major glacier is the Quarayaq in Greenland which flows 20–24 m 65–80 ft per day.

Greatest avalanches

The greatest natural avalanches, though rarely observed, occur in the Himalaya but no estimates of their volume had been published. It was estimated that 3,500,000 m³ 120 000 000 ft³ of snow fell in an avalanche in the Italian Alps in 1885. The 250 mph 400 km/h avalanche triggered by the Mount St. Helens eruption in Washington, USA on 18 May 1979 was estimated to measure 2800 million m³ 96,000 million ft³ (see also Disasters, end of Chapter 11).

WATERFALLS

Highest

The highest waterfall (as opposed to vaporized 'Bridal Veil') in the world is the Salto Angel in Venezuela, on a branch of the

River Carrao, an upper tributary of the Caroni with a total drop of 3212 ft 979 m—the longest single drop is 2648 ft 807 m. It was re-discovered by a United States pilot named James (Jimmy) Angel (died 8 Dec 1956), who crashed nearby on 9 Oct 1937. The falls, known by the Indians as Cherun-Meru, were first reported by Ernesto Sanchez La Cruz in 1910.

On 26 July 1982 Jim Bridwell and John N. Long (both USA) rappelled or abseiled a record 1800 ft 548 m down the face of the precipice adjacent to the fall.

Highest United Kingdom

The tallest waterfall in the United Kingdom is Eas a'Chùil Aluinn, from Glas Bheinn (2541 ft 774 m), Highland, Scotland, with a drop of 658 ft 200 m. England's highest fall above ground is Caldron (or Cauldron) Snout, on the Tees, with a fall of 200 ft 60 m in 450 ft 135 m of cataracts, but no sheer leap. It is on the border of Durham and Cumbria. The cascade in the Gaping Gill Cave descends 365 ft 111 m. The highest Welsh waterfall is the Pistyll-y-Llyn on the Powys-Dyfed border which exceeds 300 ft 90 m in descent.

Highest Ireland

The highest falls in Ireland are the Powerscourt Falls (350 ft 106 m), on the River Dargle, County Wicklow.

Greatest

On the basis of the average annual flow, the greatest waterfall in the world is the Guairá (374 ft 114 m high), known also as the Salto dos Sete Quedas, on the Alto Paraná River between Brazil and Paraguay. Although attaining an average height of only 110 ft 33.5 m, its estimated annual average flow over the lip (5300 yd 4850 m wide) is 470,000 cusec 13 300 m³/sec. The amount of water this represents can be imagined by supposing that it was pouring into the dome of St Paul's Cathedral—it would fill it completely in three-fifths of a second. It has a peak flow of 1,750,000 cusec 50 000 m³/sec. The seven cataracts of the Boyoma (formerly Stanley) Falls in the Congo (Kinshasa) have an average annual flow of 600,000 cusec 17 000 m³/sec.

It has been calculated that, when some 5,500,000 years ago the Mediterranean basins began to be filled from the Atlantic through the Straits of Gibraltar, a waterfall 26 times greater than the Guairá and perhaps 800 m 2625 ft high was formed.

Widest

The widest waterfalls in the world are the Khône Falls (50–70 ft 15–21 m high) in Laos, with a width of 6.7 miles 10.8 km and a flood flow of 1,500,000 cusec 42 500 m³/sec.

RIVERS**Longest World**

The two longest rivers in the world are the Amazon (*Amazonas*), flowing into the South Atlantic, and the Nile (*Bahr-el-Nil*) flowing into the Mediterranean. Which is the longer is more a matter of definition than simple measurement.

The true source of the Amazon was discovered in 1953 to be a stream named Huarco, rising near the summit of Cerro Huagra (17,188 ft 5238 m) in Peru. This stream progressively becomes the Toro then the Santiago then the Apurimac, which in turn is known as the Ene and then the Tambo before its confluence with the Amazon prime tributary the Ucayali. The length of the Amazon from this source to the South Atlantic *via* the Canal do Norte was measured in 1969 to be 4007 miles 6448 km (usually quoted to the rounded off figure of 4000 miles 6437 km).

If, however, a vessel navigating down the river turns to the south of Ilha de Marajó through the straits of Breves and Boiuci into the Pará, the total length of the water-course becomes 4195 miles 6750 km. The Pará is not however a tributary of the Amazon, being hydrologically part of the basin of the Tocantins.

The length of the Nile watercourse, as surveyed by M. Devroey (Belgium) before the loss of a few miles of meanders due to the formation of Lake Nasser, behind the Aswan High Dam, was 4145 miles 6670 km. This course is the hydrologically acceptable one from the source in Burundi of the Luvironza branch of the Kagera feeder of the Victoria Nyanza *via* the White Nile (*Bahr-el-jebel*) to the delta.

Longest Great Britain

The longest river in Great Britain is the Severn, which empties into the Bristol Channel and is 220 miles 354 km long. Its basin extends over 4409 miles² 11 419 km². It rises in north-western Powys and flows through Shropshire, Hereford and Worcester, Gloucestershire and Avon and has a record 17 tributaries. The longest river *wholly* in England is the Thames, which is 215 miles, 346 km long to the Nore. Its remotest source is at Seven Springs, Gloucestershire, whence the River Churn joins the other head waters. The source of the Thames proper is Trewsbury Mead, Coates, Cirencester, Gloucestershire. The basin measures 3841 miles² 9948 km². The Yorkshire Ouse's 11 tributaries aggregate 629 miles 1012 km.

The longest river wholly in Wales is the Towy, with a length of 64 miles 102 km. It rises in Dyfed and flows out into Carmarthen Bay. The longest river in Scotland is the Tay, with Dundee, Tayside, on the shore of the estuary. It is 117 miles 188 km long from the source of its remotest head-stream, the River Tummel, Tayside and has the greatest volume of any river in Great Britain, with a flow of up to 49,000 cusecs 1387 m³ per sec. Of Scottish rivers the Tweed and the Clyde have most tributaries with 11 each.

Longest Ireland

The longest river in Ireland is the Shannon, which is longer than any river in Great Britain. It rises 258 ft 78.6 m above sea-level, in County Cavan, and flows through a series of loughs to Limerick. It is 240 miles 386 km long, including the 56 mile 90 km long estuary to Loop Head. The basin area is 6060 miles² 15 695 km².

Shortest river

The world's shortest named river is the D River, Lincoln City, Oregon, USA which connects Devil's Lake to the Pacific Ocean and is 440 ft 134 m long at low tide.

Largest basin and longest tributary

The largest river basin in the world is that drained by the Amazon (4007 miles 6448 km). It covers about 2,720,000 miles² 7 045 000 km². It has about 15,000 tributaries and subtributaries, of which four are more than 1000 miles 1609 km long. These include the Madeira, the longest of all tributaries, with a length of 2100 miles 3380 km, which is surpassed by only 14 rivers in the whole world.

Longest sub-tributary

The longest sub-tributary is the Pilcomayo (1000 miles 1609 km long) in South America. It is a tributary of the Paraguay (1500 miles 2415 km long), which is itself a tributary of the Paraná (2500 miles 4025 km).

Longest estuary

The world's longest estuary is that of the often frozen Ob', in the northern USSR, at 550 miles 885 km. It is up to 50 miles 80 km wide.

Largest delta

The world's largest delta is that created by the Ganga (Ganges) and Brahmaputra in Bangla Desh (formerly East Pakistan) and West Bengal, India. It covers an area of 30,000 miles² 75 000 km².

Greatest flow

The greatest flow of any river in the world is that of the Amazon, which discharges an average of 4,200,000 cusec 120 000 m³/sec into the Atlantic Ocean, rising to more than 7,000,000 cusec 200 000 m³/sec in full flood. The lowest 900 miles 1450 km of the Amazon average 300 ft 90 m in depth.

Submarine river

In 1952 a submarine river 250 miles 400 km wide, known as the Cromwell current, was discovered flowing eastward 300 ft 90 m below the surface of the Pacific for 3500 miles 5625 km along the equator. Its volume is 1000 times that of the Mississippi.

Subterranean river

In August 1958 a crypto-river was tracked by radio isotopes flowing under the Nile with 6 times its mean annual flow or 500,000 million m³ 20 million million ft³.

Largest swamp

The world's largest tract of swamp is in the basin of the Pripyet or Pripyat River—a tributary of the Dnieper in the USSR. These swamps cover an estimated area of 18,125 miles² 46 950 km².

RIVER BORES**World**

The bore on the Ch'ient'ang'kian (Hang-chou-fe) in eastern China is the most remarkable in the world. At Spring tides the wave attains a height of up to 25 ft 7.5 m and a speed of 13 knots 24 km/h. It is heard advancing at a range of 14 miles 22 km. The bore on the Hooghly branch of the Ganges travels for 70 miles 110 km at more than 15 knots 27 km/h. The annual downstream flood wave on the Mekong sometimes reaches a height of 46 ft 14 m. The greatest volume of any tidal bore is that of the Canal do Norte (10 miles 16 km wide) in the mouth of the Amazon.

Great Britain

The most notable river bore in the United Kingdom is that on the Severn, which attained a measured height of 9¼ ft 2.8 m on 15 Oct 1966 downstream of Stone-bench, and a speed of 13 mph 20 km/h. It travels as far up as Severn Stoke in Hereford and Worcester.

LIGHT YEAR—the distance travelled by light (speed 186,282,397 miles/sec; 299,792,458 km/sec) in a year. At 186,282,397 miles/sec (299,792,458 km/sec) it takes 365.256 days for light to travel from the Sun to the Earth. At 186,282,397 miles/sec (299,792,458 km/sec) it takes 365.256 days for light to travel from the Sun to the Earth. At 186,282,397 miles/sec (299,792,458 km/sec) it takes 365.256 days for light to travel from the Sun to the Earth.

MAGNITUDE—a measure of stellar brightness such that the light of a star of any magnitude bears a ratio of 2.511886 to that of a star of the next magnitude. Thus a fifth magnitude star is 2.511886 times as bright, while one of the first magnitude is exactly 100 (or 2.511886⁵) times as bright, as a sixth magnitude star. In the case of such exceptionally bright bodies as Sirius, Venus, the Moon (magnitude -12.71) or the Sun (magnitude -26.78), the magnitude is expressed as a minus quantity.

PROPER MOTION—that component of a star's motion in space which, at right angles to the line of sight, constitutes an apparent change of position of the star in the celestial sphere.

The universe is the entirety of space, matter and anti-matter. An appreciation of its magnitude is best grasped by working outward from the Earth, through the Solar System and our own Milky Way Galaxy, to the remotest extra-galactic nebulae and quasars.

METEORIDS

Meteor shower

Meteoroids are of cometary or asteroidal origin. A meteor is the light phenomenon caused by the entry of a meteoroid into the Earth's atmosphere. The greatest meteor 'shower' on record occurred on the night of 16-17 Nov 1966, when the Leonid meteors (which recur every 33¼ years) were visible between western North America and eastern USSR. It was calculated that meteors passed over Arizona, USA, at a rate of 2300 per min for a period of 20 min from 5 a.m. on 17 Nov 1966.

METEORITES

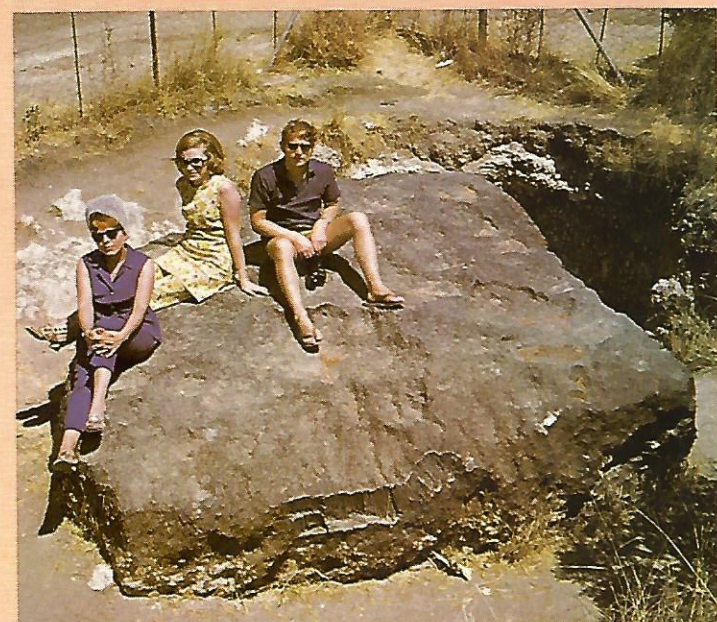
Oldest

It was reported in August 1978 that dust grains in the Murchison meteorite which fell in Australia in September 1969 pre-date the formation of the Solar System.

Largest World

When a meteoroid penetrates to the Earth's surface, the remnant is described as a meteorite. This occurs about 150 times per year over the whole land surface of the Earth. Although the chances of being struck are deemed negligible, the most anxious time of day for meteorophobes is 3 p.m. The largest known meteorite is one found in 1920 at Hoba West, near Grootfontein in south-west Africa. This is a block 9 ft 2.75 m long by 8 ft 2.43 m broad, estimated to be 132,000 lb (59 tons/tonnes). The largest meteorite exhibited by any museum is the 'Tent' meteorite, weighing 68,085 lb (30.39 tons 30 882 kg) found in 1897 near Cape York, on the west coast of Greenland, by the expedition of Commander (later Rear-Admiral) Robert Edwin Peary (1856-1920). It was known to the Eskimos as the Abnighito and is now exhibited in the Hayden Planetarium in New

The largest known meteorite estimated to weigh 59 tons/tonnes found at Hoba West near Grootfontein in Namibia (SW Africa). It was not found until 1920



4. The Universe and Space

GUINNESS BOOK OF RECORDS



Earliest successful manned satellite



Noctilucent Clouds photographed above Edinburgh on 29 June 1981 at a height of about 80 km 50 miles. (Brian Cameron, University of Edinburgh)

York City, NY, USA. The largest piece of stony meteorite recovered is a piece of 1770 kg 3902 lb part of a shower which struck Jilin (formerly Kirin), China on 8 Mar 1976. The oldest dated meteorites are from the Allende fall in Chihuahua, Mexico on 8 Feb 1969 dating back to 4,610 million years.

There was a mysterious explosion of $12\frac{1}{2}$ megatons in Lat. $60^{\circ} 55' N$, Long. $101^{\circ} 57' E$, in the basin of the Podkamennaya Tunguska river, 40 miles north of Vanavar, in Siberia, USSR, at 08 hrs 17 min 11 sec UT on 30 June 1908. The cause was variously attributed to a meteorite (1927), a comet (1930), a nuclear explosion (1961) and to anti-matter (1965). This devastated an area of about 1500 miles² 3885 km² and the shock was felt as far as 1000 km (more than 600 miles) away. The theory is now favoured that this was the terminal flare of stony debris from a comet, possibly Encke's comet, at altitude of only 6 km or less than 20,000 ft. A similar event may have occurred over the Isle of Aneholm, Lincolnshire a few thousand years before.

Largest United Kingdom and Ireland

The heaviest of the 22 meteorites known to have fallen on the British Isles since 1623 was one weighing at least 102 lb 46,25 kg (largest piece 17 lb 6 oz 7,88 kg), which fell at 4.12 p.m. on 24 Dec 1965 at Barwell, Leicestershire. Scotland's largest recorded meteorite fell in Strathmore, Tayside on 3 Dec 1917. It weighed 224 lb 10,09 kg and was the largest of four stones totalling 29 lb 6 oz 13,324 kg. The largest recorded meteorite to fall in Ireland was the Limerick Stone of 65 lb 29,5 kg, part of a shower weighing more than 106 lb 48 kg which fell near Adare County Limerick, on 10 Sept 1813. The larger of the two recorded meteorites to land in Wales was one weighing 28 oz 794 g of which a piece weighing 25½ oz 723 g went through the roof of the Prince Llewellyn Hotel in Beddgelert, Gwynedd, shortly before 3.15 a.m. on 21 Sept 1949.

Largest craters

It has been estimated that some 2,000 asteroid-Earth collisions have occurred in the last 600 million years. A total of 96 collision sites or astroblemes have been recognized. A crater 150 miles 241 km in diameter and ½ mile 805 m deep has been postulated in Wilkes Land, Antarctica since 1962. It would be caused by a 13,000 million ton meteorite striking at 44,000 mph 70 811 km/h. USSR scientists reported in December 1970 an astrobleme with a 60 mile 95 km diameter and a maximum depth of 1300 ft 400 m in the basin of the River Popigai. There is a possible crater-like formation or astrobleme 275 miles 442,5 km in diameter on the eastern shore of the Hudson Bay, Canada, where the Nastapoka Islands are just off the coast.

The largest proven crater is the Coon Butte or Barringer crater, discovered in 1891 near Canyon Diablo, Winslow, northern Arizona, USA. It is 4150 ft 1265 m in diameter and now about 575 ft 175 m deep, with a parapet rising 130–155 ft 40–48 m above the surrounding plain. It has been estimated that an iron-nickel mass with a diameter of 200–260 ft 61–79 m and weighing about 2,000,000 tons/tonnes gouged this crater in c. 25,000 BC.

Evidence was published in 1963 discounting a meteoric origin for the crypto-volcanic Vredefort Ring (diameter 26 miles 41,8 km), to the south-west of Johannesburg, South Africa, but this has now been re-asserted. The New Quebec (formerly the Chubb) 'Crater', first sighted on 20 June 1943 in northern

Meteorites/Aurorae/The Moon

Ungava, Canada, is 1325 ft 404 m deep and measures 6.8 miles 10,9 km round its rim.

Fireball Brightest

The brightest fireball ever photographically recorded was by Dr Zdenek Cepelcha over Sumava, Czechoslovakia on 4 Dec 1974 with a momentary magnitude of -22 or 10,000 times brighter than a full Moon.

Tektites

The largest tektite of which details have been published has been of 3,2 kg 7.04 lb found in 1932 at Muong Nong, Saravane Province, Laos and now in the Paris Museum.

AURORAE

Most frequent

Polar lights, known since 1560 as Aurora Borealis or Northern Lights in the northern hemisphere and since 1773 as Aurora Australis in the southern hemisphere, are caused by electrical solar discharges in the upper atmosphere and occur most frequently in high latitudes. Aurorae are visible at some time on every clear dark night in the polar areas within 20 degrees of the magnetic poles. The extreme height of aurorae has been measured at 1000 km 620 miles, while the lowest may descend to 45 miles 72,5 km. Reliable figures exist only from 1952, since when the record high and low number of nights of auroral displays in Shetland (geomagnetic Lat. 63°) has been 203 (1957) and 58 (1965). The most recent great display in north-west Europe was that of 4–5 Sept 1958.

Lowest latitudes

Extreme cases of displays in very low latitudes are Cuzco, Peru (2 Aug 1744); Honolulu, Hawaii (1 Sept 1859) and questionably Singapore (25 Sept 1909).

Noctilucent clouds

Regular observations in Western Europe date only from 1964, since when the record high and low number of nights on which these phenomena (at heights of c. 52 miles 85 km) have been observed have been 41 (1974) and 15 (1970).

THE MOON

The Earth's closest neighbour in space and only natural satellite is the Moon, at a mean distance of 238,855 statute miles 384 400 km centre to centre or 233,812 miles 376 284 km surface to surface. In the present century the closest approach (smallest perigee) was 216,398 miles 348 259 km surface-to-surface or 221,441 miles 356 375 km centre-to-centre on 4 January 1912, and the farthest distance (largest apogee) will be

Saturn, the ringed planet with at least 21 satellites, whose secrets were revealed by US space probes (see p. 76). (NASA)



247,675 miles 398,598 km surface-to-surface or 252,718 miles 406,711 km centre-to-centre on 2 March 1984. It has a diameter of 2159.3 miles 3475.0 km and has a mass of 7.23×10^{22} tons 7.35×10^{22} tonnes with a mean density of 3.34. The average orbital speed is 2287 mph 3680 km/h.

The first direct hit on the Moon was achieved at 2 min 24 sec after midnight (Moscow time) on 14 Sept 1959, by the Soviet space probe *Lunik II* near the *Mare Serenitatis*. The first photographic images of the hidden side were collected by the USSR's *Lunik III* from 6.30 a.m. on 7 Oct 1959, from a range of up to 43,750 miles 70,400 km and transmitted to the Earth from a distance of 470,000 km 292,000 miles. The first 'soft' landing was made by the USSR's *Luna IX*, in the area of the Ocean of Storms on 3 Feb 1966.

Blue moon

Owing to sulphur particles in the upper atmosphere from a forest fire covering 250,000 acres 100,000 ha between Mile 103 and Mile 119 on the Alaska Highway in northern British Columbia, Canada, the Moon took on a bluish colour, as seen from Great Britain, on the night of 26 Sept 1950. The Moon also appeared green after the Krakatoa eruption of 27 Aug 1883 (see p. 61) and in Stockholm for 3 min on 17 Jan 1884.

Crater Largest

Only 59 per cent of the Moon's surface is directly visible from the Earth because it is in 'captured rotation', i.e. the period of rotation is equal to the period of orbit. The largest wholly visible crater is the walled plain Bailly, towards the Moon's South Pole, which is 183 miles 295 km across, with walls rising to 14,000 ft 4250 m. The Orientale Basin, partly on the averted side, measures more than 600 miles 965 km in diameter.

Crater Deepest

The deepest crater is the Newton crater, with a floor estimated to be between 23,000 and 29,000 ft 7000–8850 m below its rim and 14,000 ft 2250 m below the level of the plain outside. The brightest directly visible spot on the Moon is *Aristarchus*.

Highest mountains

In the absence of a sea level, lunar altitudes are measured relative to an adopted reference sphere of radius 1738,000 km or 1079,943 miles. Thus the greatest elevation attained on this basis by any of the 12 US astronauts has been 7830 m 25,688 ft on the Descartes Highlands by Capt. John Watts Young USN and Major Charles M. Duke Jr on 27 Apr 1972.

Temperature extremes

When the Sun is overhead the temperature on the lunar equator reaches 243° F 117,2° C (31 deg F 17,2 deg C above the boiling point of water). By sunset the temperature is 58° F 14,4° C but after nightfall it sinks to -261° F -162,7° C.

Moon samples

The age attributed to the oldest of the moon material brought back to Earth by the *Apollo* programme crews has been soil dated to 4720 million years.

THE SUN

Distance extremes

The Earth's 66,620 mph 107,220 km/h orbit of 584,017,800 miles 939,885,500 km around the Sun is elliptical, hence our distance from the Sun varies. The orbital speed varies between 65,520 mph 105,450 km/h (minimum) and 67,750 mph 109,030 km/h. The average distance of the Sun is 1,000,000,230 astronomical units or 92,955,829 miles 149,597,906 km.

The closest approach (perihelion) is 91,402,000 miles 147,097,000 km and the farthest departure (aphelion) is 94,510,000 miles 152,099,000 km. The Solar System is revolving around the centre of the Milky Way once in each 225,000,000 years, at a speed of 481,000 mph 774,000 km/h and has a velocity of 42,500 mph 68,400 km/h relative to stars in our immediate region such as Vega, towards which it is moving.

Temperature and dimensions

The Sun has an internal temperature of about 16,000,000 K, a core pressure of 500,000,000 tons/in² 7,7 PPa and uses up 4,000,000 tons/tonnes of hydrogen per sec, thus providing a luminosity of 3×10^{27} candlepower, with an intensity of

1,500,000 candles/in² 1,530,000 candles. The Sun has the stellar classification of a 'yellow dwarf' and, although its density is only 1.407 times that of water, its mass is 332,946 times as much as that of the Earth. It has a mean diameter of 865,270 miles 1,392,520 km. The Sun with a mass of 1.958×10^{27} tons $1,989 \times 10^{27}$ tonnes represents more than 99 per cent of the total mass of the Solar System.

Sun-spots Largest

To be visible to the *protected* naked eye, a Sun-spot must cover about one two-thousandth part of the Sun's disc and thus have an area of about 500,000,000 miles² 1300 million km². The largest recorded Sun-spot occurred in the Sun's southern hemisphere on 8 Apr 1947. Its area was about 7000 million miles² 18,000 million km² with an extreme longitude of 187,000 miles 300,000 km and an extreme latitude of 90,000 miles 145,000 km. Sun-spots appear darker because they are more than 1500 deg C cooler than the rest of the Sun's surface temperature of 5525° C. The largest observed solar prominence was one protruding 365,000 miles 588,000 km, photographed on 19 Dec 1973 during the 3rd and final manned Skylab mission.

Most frequent

In October 1957 a smoothed Sun-spot count showed 263, the highest recorded index since records started in 1755 (cf. previous record of 239 in May 1778). In 1943 one Sun-spot lasted for 200 days from June to December.

ECLIPSES

Earliest recorded

The earliest extrapolated eclipses that have been identified are 1361 BC (lunar) and October 2136 BC (solar). For the Middle East only, lunar eclipses have been extrapolated to 3450 BC and solar ones to 4200 BC. No centre of the path of totality for a solar eclipse crossed London for the 575 years from 20 Mar 1140 to 3 May 1715. On 14 June 2151 at 18.25 GMT the eclipse will be 99 per cent total in central London but total in Sheffield and Norfolk. The most recent occasion when a line of totality of a solar eclipse crossed Great Britain was on 29 June 1927 for 24.5 sec at 6.23 a.m. at West Hartlepool, Cleveland and the next instance will clip the coast at St Just, Cornwall at 10.10 a.m. on Wednesday 11 Aug 1999. On 30 June 1954 a total eclipse was witnessed in Unst, Shetland Islands but the centre of the path of totality was to the north of territorial waters.

Longest duration

The maximum *possible* duration of an eclipse of the Sun is 7 min 31 sec. The longest actually *measured* was on 20 June 1955 (7 min 8 sec), seen from the Philippines. One of 7 min 29 sec should occur in mid-Atlantic on 16 July 2186, which will then be the longest for 1469 years. The longest possible in the British Isles is 5½ min. That of 15 June 885 lasted nearly 5 min, as will that of 20 July 2381 in the Border area. Durations can be extended by observers being airborne as on 30 June 1973 when an eclipse was 'extended' to 72 min aboard *Concorde*. An annular eclipse may last for 12 min 24 sec. The longest totality of any lunar eclipse is 104 min. This has occurred many times.

Most and least frequent

The highest number of eclipses possible in a year is seven, as in 1935, when there were five solar and two lunar eclipses; or four solar and three lunar eclipses, as will occur in 1982. The lowest possible number in a year is two, both of which must be solar, as in 1944 and 1969.

COMETS

Earliest recorded

The earliest records of comets date from the 7th century BC. The speeds of the estimated 2,000,000 comets vary from 700 mph 1125 km/h in outer space to 1,250,000 mph 2,000,000 km/h when near the Sun. The successive appearances of Halley's Comet have been traced back to 467 BC. It was first depicted in the Nuremburg Chronicle of AD 684. The first prediction of its return by Edmund Halley (1656–1742) proved true on Christmas Day 1758, 16 years after his death. Its next perihelion should be at 9.9 (*viz.* at 9.30 p.m. on the 9th) February 1986, 75.81 years after the last, which was on 19 Apr 1910. The 33rd sighting may occur as early as December 1984.

Closest approach

On 1 July 1770, Lexell's Comet, travelling at a speed of 23.9 miles/sec 38.5 km/sec (relative to the Sun), came within 745,000

miles 1 200 000 km of the Earth. However, the Earth is believed to have passed through the tail of Halley's Comet, most recently on 19 May 1910.

Largest

Comets are so tenuous that it has been estimated that even the head of one rarely contains solid matter much more than c. 1 km 0.6 miles in diameter. Tails, as in the case of the brightest of all, the Great Comet of 1843, may trail for 205,000,000 miles 330 million km. The head of Holmes Comet of 1892 once measured 1,500,000 miles 2 400 000 km in diameter. Comet Bennett which appeared in January 1970 was found to be enveloped in a hydrogen cloud measuring some 8,000,000 miles 12 750 000 km in length.

Shortest period

Of all the recorded periodic comets (these are members of the Solar System), the one which most frequently returns is Encke's Comet, first identified in 1786. Its period of 1206 days (3.3 years) is the shortest established. Not one of its 51 returns (including 1977) has been missed by astronomers. Now increasingly faint, it is expected to 'die' by February 1994. The most frequently observed comets are Schwassmann-Wachmann I, Kopff and Oterma which can be observed every year between Mars and Jupiter.

Longest period

At the other extreme is Delavan's Comet of 1914, whose path was not accurately determined. It is not expected to return for perhaps 24 million years.

PLANETS

Largest

Planets (including the Earth) are bodies within the Solar System and which revolve round the Sun in definite orbits. Jupiter, with an equatorial diameter of 88,846 miles 142 984 km and a polar diameter of 83,082 miles 133 708 km is the largest of the nine major planets, with a mass 317.83 times, and a volume 1321.4 times that of the Earth. It also has the shortest period of rotation resulting in a Jovian day of only 9 hr 50 min 30.003 sec in the equatorial zone.

Smallest and coldest

The smallest and coldest planet is Pluto, with its partner Charon, announced on 22 June 1978 which have an estimated surface temperature of -360°F -220°C (100 deg F 53 deg C above absolute zero). Their mean distance from the Sun is 3,674,488,000 miles 5 913 514 000 km and their period of revolution is 248.54 years. The diameter is c. 3000 km 1880 miles and the mass is about 1/500th of that of the Earth. Pluto was first recorded by Clyde William Tombaugh (b. 4 Feb 1906) at Lowell Observatory, Flagstaff, Arizona, USA, on 18 Feb 1930 from photographs taken on 23 and 29 Jan and announced on 13 Mar. Because of its orbital eccentricity Pluto moved closer to the Sun than Neptune between 23 Jan 1979 and 15 Mar 1999.

Fastest

Mercury, which orbits the Sun at an average distance of 35,983,100 miles 57 909 200 km, has a period of revolution of 87.9686 days, so giving the highest average speed in orbit of 107,030 mph 172 248 km/h.

Hottest

For Venus a surface temperature of 462°C 864°F has been estimated from measurements made from the USSR *Venera* and US Pioneer Cytherean surface probes.

Venus has a canyon 4 miles 6.4 km deep and 250 miles 402 km long 1000 miles 1609 km south of Venusian equator.

Nearest

The fellow planet closest to the Earth is Venus, which is, at times, about 25,700,000 miles 41 360 000 km inside the Earth's orbit, compared with Mars's closest approach of 34,600,000 miles 55 680 000 km outside the Earth's orbit. Mars, known since 1965 to be cratered, has temperatures ranging from 85°F 29°C to -190°F -123°C .

Surface features

By far the highest and most spectacular is Olympus Mons (formerly Nix Olympica) in the Tharsis region of Mars with a diam-

eter of 500-600 km 310-370 miles and a height of 26 ± 3 km 75,450-95,150 ft above the surrounding plain.

Brightest and faintest

Viewed from the Earth, by far the brightest of the five planets visible to the naked eye (Uranus at magnitude 5.5 is only marginally visible) is Venus, with a maximum magnitude of -4.4 . The faintest is Pluto, with a magnitude of 15.0.

Densest and least dense

Earth is the densest planet with an average figure of 5.515 times that of water, whilst Saturn has an average density only about one-eighth of this value or 0.687 times that of water.

Conjunctions

The most dramatic recorded conjunction (coming together) of the other seven principal members of the Solar System (Sun, Moon, Mercury, Venus, Mars, Jupiter and Saturn) occurred on 5 Feb 1962, when 16° covered all seven during an eclipse in the Pacific area. It is possible that the seven-fold conjunction of September 1186 spanned only 12° . The next notable conjunction will take place on 5 May 2000.

SATELLITES

Most

Of the nine major planets, all but Venus and Mercury have satellites. The planet with the most is Saturn with at least 21 satellites. The Earth and Pluto are the only planets with a single satellite. The distance from their parent planets varies from the 5827 miles 9378 km of Phobos from the centre of Mars to the 14,730,000 miles 23 705 000 km of Jupiter's outer satellite Sinope (Jupiter IX). The Solar System has a total of at least 48 satellites.

Largest and smallest

The largest and heaviest satellite is *Ganymede* (Jupiter. III), which is 2.02 times heavier than our own Moon and has a diameter of 3270 miles 5262 km. The smallest satellite is *Leda* (Jupiter XIII) with a diameter of less than 9 miles 15 km.

Largest asteroids

In the belt which lies between Mars and Jupiter, there are some 45,000 (only 2614 numbered to April 1982) minor planets or asteroids which are, for the most part, too small to yield to diameter measurement. The largest and first discovered (by G. Piazzi at Palermo, Sicily on 1 Jan 1801) of these is *Ceres*, with a diameter of 637 miles 1025 km. The only one visible to the naked eye is asteroid 4 *Vesta* (diameter 345 miles 555 km) discovered on 29 Mar 1807 by Dr Heinrich Wilhelm Olbers (1758-1840), a German amateur astronomer. The closest measured approach to the Earth by an asteroid was 485,000 miles 780 000 km in the case of *Hermes* on 30 Oct 1937 (asteroid now lost). The most distant detected is 2060 *Chiron*, found between Saturn and Uranus on 18-19 Oct 1977, by Charles T. Kowal from the Hale Observatory, California, USA.

STARS

Largest and most massive

The most massive star is the faint-blue R 136a in the Tarantula Nebula (or 30 Doradus), an appendage of the Lesser Magellanic Cloud, announced on 19 Jan 1981 and believed to be of 3500 Solar masses and 150,000 light years distant. Betelgeux (top left star of Orion) has a diameter of > 400 million km 250 million miles and in 1978 was found to be surrounded by a tenuous 'shell' of potassium 1,6 million million km or 11 000 astronomical units. The light from Betelgeux left it in AD 1460.

Smallest

The least massive stars known are the two components of the binary star *Wolf 424*, a faint star in Virgo. Each of the two stars has only 0.06 solar masses.

Brightest

Sirius A (*Alpha Canis Majoris*), also known as the Dog Star, is apparently the brightest star of the 5776 stars visible in the heavens, with an apparent magnitude of -1.46 . It is in the constellation *Canis Major* and is visible in the winter months of the northern hemisphere, being due south at midnight on the last day of the year. The Sirius system is 8.64 light-years distant and

PROGRESSIVE RECORDS OF THE MOST DISTANT MEASURED HEAVENLY BODIES

The possible existence of galaxies external to our own Milky Way system was mooted in 1786 by Sir William Herschel (1738-1822). These extra-galactic nebulae were first termed 'island universes'. Sir John Herschel (1792-1871) opined as early as 1835 that some were some 300,000 billion miles distant. The first direct measurement of any body outside our Solar System was in 1838.

Estimated Distance in Light Years ¹	Object	Method	Astronomer	Observatory	Date
nearly 11 (now 11.08)	61 Cygni	Parallax	F. Bessel	Königsberg, Germany	1838
>20 (now 25)	Vega	Parallax	F. G. W. Struve	Dorpat (now Tartu), Estonia	1840
c. 200	Limit	Parallax			by 1900
750,000 (now 2.12m) ²	Galaxy M31	Cepheid variable	E. P. Hubble	Mt. Wilson, Cal., USA	1923
900,000 (now 2.12m) ²	Galaxy M31	Cepheid variable	E. P. Hubble	Mt. Wilson, Cal., USA	1924
Millions of Light Years	Recession Speed % of c	Red shift ³			
250	2.5		E. P. Hubble	Mt. Wilson, Cal., USA	by 1934 ⁴
>350	3.6		M. L. Humason	Palomar, Cal., USA	1949
	>10		M. L. Humason	Palomar, Cal., USA	1954
3000	31			Palomar, Cal., USA	1956
c. 4500	46		R. Minkowski	Palomar, Cal., USA	June 1960
5300	54.5	0.46		Palomar, Cal., USA	April 1964 ⁵
8700	80		M. Schmidt	Palomar, Cal., USA	May 1965
c. 9000	81		Margaret Burbidge et al.	Palomar, Cal., USA	Dec 1965
	82.2	2.88	M. Schmidt	Palomar, Cal., USA	Jan 1966
10,000	82.4		J. G. Bolton	Parkes, NSW, Australia	March 1967
	83.8		E. Olsen	Palomar, Cal., USA	July 1968
	87.5			Kitt Peak, Arizona, USA	May 1970
15,000	92		R. F. Carswell et al.	Steward Observatory, Arizona, USA	March 1973
15,000	95.5	3.53	Margaret Burbidge, E. Joseph Wampler et al.	Lick Observatory, Cal., USA	April 1973
c. 16,000	>96	3.78	Dr Anne Savage et al.	Anglo-Australian Observatory, Epping, NSW, Australia	March 1982

Note: c is the notation for the speed of light. (see p. 73) ¹ Term first utilised in March 1888. ² Re-estimate by G. de Vaucouleurs in May 1977. ³ Discovered by V. M. Slipher from Flagstaff, Arizona, USA 1920. Redshift, denoted by z, is the measure of the speed of recession indicated by the ratio resulting from the subtraction of the rest wavelength of an emission line from the observed wavelength divided by the rest wavelength. ⁴ In this year Hubble opined that the observable horizon would be 3000 m light-years. ⁵ Then said that QSO 3C2 and 286 might be more distant—latter claimed by Dr Shklovsky (USSR) to be receding at 55 per cent of c in December 1963. Note: Recent reassessments have tended to resile from figures tending towards 20,000 million light years with a 14,500 million figure still being the current best median value. The launch of the Space Telescope in 1985 may produce an even more distant champion with a higher value of z.

has a luminosity 26 times as much as that of the Sun. It has a diameter of 1,450,000 miles 2,33 million km and a mass of 4.20×10^{27} tons 4,26 $\times 10^{27}$ tonnes. The faint white dwarf companion Sirius B has a diameter of only 6000 miles 10 000 km but is 350,000 times heavier than the Earth.

Farthest

The Solar System, with its Sun, nine principal planets, 43 satellites, asteroids and comets, was estimated in 1921 to be about 32,000 light-years from the centre of the lens-shaped Milky Way galaxy (diameter 100,000 light-years) of about 100,000 million stars. The most distant star in our galaxy was therefore estimated to be 80,000 light-years distant. A recalibration, published in 1980, however indicates the Galaxy has a diameter of c. 70,000 light years with the most distant star hence less than 60,000 light years away.

Nearest

Excepting the special case of our own Sun (q.v. above) the nearest star is the very faint *Proxima Centauri*, which is 4.22 light-years (24,800,000,000,000 miles 4.00×10^{13} km) away. The nearest star visible to the naked eye is the southern hemisphere star *Alpha Centauri*, or *Rigel Kentaurus* (4.35 light-years), with a magnitude of -0.29. By AD 11,800 the nearest star will be Barnard's Star (see below under Stellar Planets) at a distance of 3.75 light years.

Most and least luminous

If all stars could be viewed at the same distance, the most luminous would be the apparently faint variable *S. Doradus*, in the Greater Magellanic Cloud (*Nebecula Major*), which can be nearly 1 million times brighter than the Sun, and has an absolute magnitude of -8.9. The variable η *Carinae* in c. 1840 was perhaps 4 million times more luminous than the sun. The faintest star detected visually is a very red star, known as LP 425-140, 23.5 light years distant with about one millionth of the Sun's brightness.

Brightest super-nova

Super-novae, or temporary 'stars' which flare and then fade, occur perhaps five times in 1000 years in our galaxy. The brightest 'star' ever seen by historic man is believed to be the super-nova SN 1006 in April 1006 near *Lupus* β which flared for 2 years and attained a magnitude of -9 to -10. It is now believed to be the radio source G.327.6 + 14.5 nearly 3000 light-years distant.

Constellations

The largest of the 89 constellations is *Hydra* (the Sea Serpent), which covers 1,302.844 deg² or 6.3 per cent of the hemisphere and contains at least 68 stars visible to the naked eye (to 5.5 mag.). The constellation *Centaurus* (Centaur), ranking ninth in area embraces however at least 94 such stars. The smallest constellation is *Crux Australis* (Southern Cross) with an area of 68.477 deg² compared with the 41,252.96 deg² of the whole sky.

Stellar planets

Planetary companions, with a mass of less than 7 per cent of their parent star, have been reported for 61 *Cygni* (1942), *Lalande* 21185 (1960) *Krüger* 60, *Ci* 2354, *BD* + 20° 2465 and one of the two components of 70 *Ophiuchi*. A planet of 6 times the mass of Jupiter, 750 million miles 1200 million km from *Epsilon Eridani* (see below) was reported by Peter van de Kamp in January 1973. In August 1975 van de Kamp reported that Barnard's Star (Munich 15040) possibly had two planets equivalent in mass to Jupiter and Saturn.

Listening operations ('Project Ozma') on *Tau Ceti* and *Epsilon Eridani* were maintained from 4 Apr 1960 to March 1961, using an 85-ft 25,90 m radio telescope at Deer Creek Valley, Green Bank, West Virginia, USA. The apparatus was probably insufficiently sensitive for any signal from a distance of 10.7 light-years to be received. Monitoring has been conducted from Gorkiy, USSR since 1969.

Longest name

The longest name for any star is *Shurnarkabtishashutu*, the Arabic for 'under the southern horn of the bull'.

Black Holes

The first tentative identification of a Black Hole was announced in December 1972 in the binary-star X-ray source Cygnus X-1. This is a small dark companion of some 10 solar masses from which the escape velocity tends to c (the velocity of light). The critical size has been estimated to be as low as a diameter of 3.67 miles 5,90 km. In early 1978 supermassive Black Holes were suggested with a mass of 100 million suns— 2×10^{35} tonnes.

THE UNIVERSE

Outside the Milky Way galaxy, which is part of the so-called Local Group of galaxies moving toward the Virgo cluster 50 million light-years distant, at a speed estimated to be between 200

PROGRESSIVE ROCKET ALTITUDE RECORDS

Height in miles	Height in km	Rocket	Place	Launch	Date
0.71	1.14	A 3 in 7.62 cm rocket	near London, England	April	1750
1.24	2	Reinhold Tiling ¹ (Germany) solid fuel rocket	Genabuck, Germany	April	1931
3.1	5	GIRD-X liquid fuel (USSR)	USSR	25 Nov	1933
8.1	13	USSR 'Stratosphere' rocket	USSR		1935
52.46	84.42	A.4 rocket (Germany) ²	Peenemünde, Germany	3 Oct	1942
c. 85	c. 136	A.4 rocket (Germany) ²	Heidelager, Poland	early	1944
116	190	A.4 rocket (Germany) ²	Heidelager, Poland	mid	1944
244	392.6	V-2/W.A.C. Corporal (2-stage) Bumper No. 5 (USA)	White Sands, NM, USA	24 Feb	1949
318	512	GFR (B-5-B) (USSR)	Tyuratam, USSR		1950-52
682	1097	Jupiter C (USA)	Cape Canaveral, Florida, USA	20 Sept	1958
>800	>1300	ICBM test flight (USSR)	Tyuratam, USSR	Aug	1957
>2700	>4345	Farside No. 5 (4-stage) (USA)	Eniwetok Atoll	20 Oct	1957
70,700	113,770	Pioneer I-B Lunar Probe (USA)	Cape Canaveral, Florida, USA	11 Oct	1958
215,300,000*	346,480,000	Luna 1 or Mecha (USSR)	Tyuratam, USSR	2 Jan	1959
242,000,000*	389,450,000	Mars 1 (USSR)	USSR	1 Nov	1962
2,845,000,000*	4,580,000,000	Pioneer 10 (USA) (see page 79)	Kennedy Space Center, Cape Canaveral, Florida, USA	2 Mar	1972

* Apogee in solar orbit. ¹ There is some evidence that Tiling may shortly after have reached 9500 m (5.90 miles) with a solid fuel rocket at Wangerooge, East Friesian Islands, W. Germany. ² The A4 was latterly referred to as the V2 rocket, a code for second revenge weapon (vergeltungswaffe) following upon the V1 'flying bomb'. ³ This will be the distance attained in March 1983 when Pioneer 10 crosses the orbit of Neptune. A distance of 4435 million miles 7135 million km will be reached by mid 1989 when crossing the orbit of Pluto and leaving the Solar System's effective gravitational field for deep space.

and 500 km/sec 450,000 and 1,100,000 mph, there exist 10,000 million other galaxies. These range in size up to the largest known object in the Universe, the radio galaxy 3C-345, announced from Effelsberg, near Bonn, W. Germany in March 1980, which is 78 million light-years or 72×10^{19} km across. It is estimated to be 5,000 million light-years distant.

Farthest visible object

The remotest heavenly body visible with the naked eye is the Great Galaxy in *Andromeda* (Mag. 3.47), known as Messier 31. This is a rotating nebula in spiral form, and its distance from the Earth is about 2,120,000 light-years, or about 12,500,000,000,000,000 miles 20×10^{18} km and is moving towards us. It is just possible however that, under ideal seeing conditions, Messier 33, the Spiral in Triangulum (Mag. 5.79), can be glimpsed by the naked eye of keen-sighted people at a distance of 2,360,000 light-years.

Quasars

In November 1962 the existence of quasi-stellar radio sources ('quasars' or QSO's) was established by Maarten Schmidt with 3C-273 with a red shift of $z = 0.158$. Quasars have immensely high luminosity for bodies so distant and of such small diameter. In April 1975 it was announced that 3C-279 had a measured luminosity of 2.75×10^{14} that of the sun. The first double quasar (0957 + 56) among the 1500 known, was announced in May 1980.

Pulsars

The earliest observation of a pulsating radio source or 'pulsar' CP 1919 by Dr Jocelyn Bell Burnell was announced from the Mullard Radio Astronomy Observatory, Cambridgeshire, England, on 29 Feb 1968. The 100th was announced from Jodrell Bank, Cheshire in June 1973. The fastest so far discovered is NP 0532 in the Crab Nebula with a pulse period of 33 milli-sec. The now accepted model is that they are rotating neutron stars with an inner core density of 4.7×10^{15} g/cm³ 74,400 million tons/in³.

Remotest object

The interpretation of very large red shifts exhibited by quasars remains controversial. The record value of $z = 3.78$ for Quasar PKS 2000 - 330 (see Table p. 77) has been interpreted as indicating proximity to the maximum presently acceptable distance (the observable horizon) of 16,500 million light years or 9,700,000,000,000,000 miles 15.6×10^{21} km. The most distant known galaxy 3C 427, which has a red shift of 1.175, was announced in March 1981. The 3° background radiation or primordial hiss discovered in 1965 by Arno Penzias and Robert Wilson of Bell Laboratories appears to be moving at a velocity of 99.9998 per cent c.

Age of the Universe

For the age of the Universe a consistent value of $14\frac{1}{2} \pm 2$ aeons or gigayears (an aeon or gigayear being 1,000 million years) is obtained from cosmochronology (Schramm 1978) and nucleo-

chronology (Winters and Macklin 1982). A reliable value cannot be estimated from the Hubble ratio method since reported values vary between 40 and 110 km/s/Mpc, equivalent to a Universe age of between 8 and 25 aeons. The value of $14\frac{1}{2}$ aeons is equivalent to a Hubble ratio of 60 km/s/Mpc.

ROCKETRY AND MISSILES

Earliest uses

War rockets, propelled by a charcoal-saltpetre-sulphur gunpowder, were described by Tseng Kung Liang of China in 1042. These early rockets became known in Europe by 1258. The pioneer of military rocketry in Britain was Col. Sir William Congreve, Bt., MP (1772-1828), Comptroller of the Royal Laboratory, Woolwich, Greater London and Inspector of Military Machines, whose 'six-pound 2.72 kg rocket' was developed to a range of 2000 yd 1825 m by 1805 and first used by the Royal Navy against Boulogne, France on 8 Oct 1806.

The first launching of a liquid-fuelled rocket (patented 14 July 1914) was by Dr Robert Hutchings Goddard (1882-1945) of the United States, at Auburn, Massachusetts, USA, on 16 Mar 1926, when his rocket reached an altitude of 41 ft 12.5 m and travelled a distance of 184 ft 56 m. The USSR's earliest rocket was the semi-liquid fuelled GIRD-IX tested on 17 Aug 1933.

Longest ranges

On 16 Mar 1962, Nikita Khrushchiov, then Prime Minister of the USSR, claimed in Moscow that the USSR possessed a 'global rocket' with a range of 30 000 km (about 19,000 miles) i.e. more than the Earth's semi-circumference and therefore capable of hitting any target from either direction.

Most powerful World

It has been suggested that the USSR lunar booster which blew up at Tyuratam in the summer (? July) of 1969 had a thrust of 10-14 million lb 4.5-6.35 million kg. There is some evidence of a launch of a USSR 'G' class lunar booster, larger than the US Saturn V, on 11 May 1973.

The most powerful rocket that has been publicised is the Saturn V, used for the Project Apollo and Skylab programmes on which development began in January 1962, at the John F. Kennedy Space Center, Merritt Island, Florida, USA. The rocket is 363 ft 8 in 110.85 m tall, with a payload of 74 783 kg 73.60 tons in the case of *Skylab I*, and gulps 13.4 tons 13.6 tonnes of propellant per sec for $2\frac{1}{2}$ min (2010 tons 2042 tonnes). Stage I (S-IC) is 138 ft 42.06 m tall and is powered by five Rocketdyne F-1 engines, using liquid oxygen (LOX) and kerosene, each delivering 1,514,000 lb 686 680 kg thrust. Stage II (S-II) is powered by five LOX and liquid hydrogen Rocketdyne J-2 engines with a total thrust of 1,141,453 lb 517 759 kg while Stage III (designated S-IVB) is powered by a single 228,290 lb 103 550 kg thrust J-2 engine. The whole assembly generates 175,600,000 hp and weighs up to 7,600,000 lb (3393 tons 3447 tonnes) fully loaded in the case of *Apollo 17*. It was first launched on 9 Nov 1967, from Cape Canaveral (then Kennedy), Florida.

Highest Pay Load

Skylab 1, (launched on 14 May 1973) fell to Earth on its 34,981 st orbit over the Western Australian coast at 16.32 GMT on 11 July 1979 thus leaving *Salyut 6* as the heaviest object in space. Large pieces of *Skylab 1* were found 12 km 7.45 miles south of Rawlinna and sold to a Hong Kong syndicate. The piece which most worried keraunothnetophobes was a 5175 lb 2347 kg airlock shroud.

Highest velocity

The first space vehicle to achieve the Third Cosmic velocity sufficient to break out of the Solar System was *Pioneer 10* (see table p. 78). The Atlas SLV-3C launcher with a modified Centaur D second stage and a Thiokol Te-364-4 third stage left the Earth at an unprecedented 32,114 mph 51 682 km/h on 2 Mar 1972. The highest recorded velocity of any space vehicle has been 240,000 km/h 149,125 mph in the case of the US-German solar probe *Helios B* launched on 15 Jan 1976. By March 1983 *Pioneer 10* will cross the orbit of Neptune 2845 million miles 4580 million km distant.

Ion rockets

Speeds of up to 100,000 mph 160 000 km/h are envisaged for rockets powered by an ion discharge. An ion thruster has been maintained for 9715 hours (404 days 19 hrs) at the Lewis Research Center in Cleveland, Ohio, USA. Ion rockets were first used in flight by NASA's SERT I rocket launched on 20 July 1964.

SPACE FLIGHT

The physical laws controlling the flight of artificial satellites were first propounded by Sir Isaac Newton (1642-1727) in his *Philosophiae Naturalis Principia Mathematica* ('Mathematical Principles of Natural Philosophy'), begun in March 1686 and first published in the summer of 1687. The first artificial satellite was successfully put into orbit at an altitude of 142/588 miles 228,5/946 km and a velocity of more than 17,750 mph 28 565 km/h from Tyura Tam, a site located 170 miles 275 km east of the Aral Sea on the night of 4 Oct. 1957. This spherical satellite *Sputnik* ('Fellow Traveller') 1, officially designated 'Satellite 1957 Alpha 2', weighed 83.6 kg 184.3 lb, with a diameter of 58 cm 22.8 in, and its lifetime is believed to have been 92 days, ending on 4 Jan 1958. It was designed under the direction of Dr Sergey Pavlovich Korolyov (1907-66).

Earliest successful manned satellite

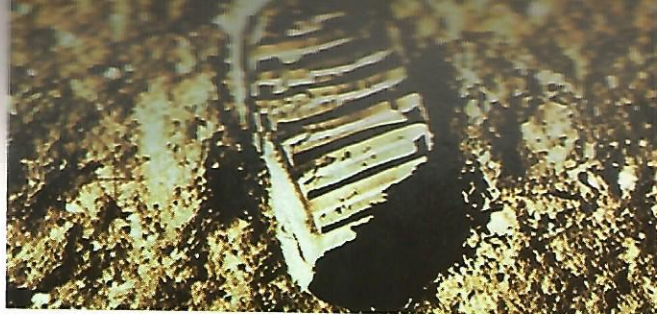
The first successful manned space flight began at 9.07 a.m. (Moscow time), or 6.07 a.m. GMT, on 12 Apr 1961. Cosmonaut Flight Major (later Colonel) Yuriy Alekseyevich Gagarin (born 9 Mar 1934) completed a single orbit of the Earth in 89.34 min in the 4.65 ton 4.72 tonnes space vehicle *Vostok* ('East') 1. The take-off was from Tyuratam in Kazakhstan, and the landing was 108 min later near the village of Smelovka, near Engels, in the Saratov region of the USSR. The maximum speed was 17,560 mph 28 260 km/h and the maximum altitude 327 km 203.2 miles in a flight of 40 868.6 km 25,394.5 miles. Major Gagarin, invested a Hero of the Soviet Union and awarded the Order of Lenin and the Gold Star Medal, was killed in a jet plane crash near Moscow on 27 Mar 1968.

First woman in space

The first and only woman to orbit the Earth was Junior Lieutenant (now Lt-Col) Valentina Vladimirovna Tereshkova, now Nikolayev (b. 6 Mar 1937), who was launched in *Vostok 6* from Tyura Tam, USSR, at 9.30 a.m. GMT on 16 June 1963, and landed at 8.16 a.m. on 19 June, after a flight of 2 days 22 hr 42 min, during which she completed over 48 orbits (1,225,000 miles 1 971 000 km) and passed momentarily within 3 miles 4.8 km of *Vostok 5*. She was formerly a textile worker. Her mission was variously reported to be punctuated with pleas to be brought back due to giddiness and of being extended because of her excellent performance.

First in flight fatality

Col. Vladimir Mikhailovich Komarov (b. 16 Mar 1927) was launched in *Soyuz* ('Union') 1 at 00.35 a.m. GMT on 23 Apr 1967. The spacecraft was in orbit for about 25½ hr but he impacted on the final descent due to parachute failure and was the first man indisputedly known to have died during space flight.



Man's first footprint on the moon made by Neil Alden Armstrong (USA). He stepped out of the Lunar Module *Eagle* on 21 July 1969 (see p. 174). (Air and Space Museum, Washington DC)

First 'walk' in space

The earliest undoubted instance of an astronaut floating free outside a space vehicle was by Astronaut, the late Edward H. White II (killed 27 Jan 1967) for 21 min over Hawaii to the US Atlantic coast on 3 June 1965 from *Gemini 4*. Evidence for the earlier claim of Lt-Col Aleksey A. Leonov from *Voskhod 2* on 18 Mar 1965 is not unreservedly accepted.

Longest manned space flight

The longest time spent in space is 185 days, by Valeriy Ryumin, and Leonid Popov on board the *Salyut-Soyuz* research station *Salyut 6*. They were launched on 8 Apr 1980 in *Soyuz 35* and landed 180 km 112 miles SE of Dzhezkzhgan on 11 Oct 1980.

Astronaut Oldest and youngest

The oldest of the 107 people of 11 nationalities in space has been Donald Kent 'Deke' Slayton (b. Sparta, Wisconsin, USA 1 Mar 1924) who was aged 51 years 146 days when launched on the Apollo-Soyuz mission on 24 July 1975. The youngest has been Major (later Col) Gherman Stepanovich Titov (b. 11 Sept 1935), who was aged 25 years 329 days when launched in *Vostok 2* on 6 Aug 1961. The only 5-time space man has been Capt. John W. Young, USN.

Duration record on the Moon

The crew of *Apollo 17* collected a record 253 lb 114.8 kg of rock and soil during their 22 hr 5 min 'extra-vehicular activity'. They were Capt Eugene A. Cernan, USN (b. Chicago, 14 Mar 1934) and Dr Harrison H. (Jack) Schmitt (b. Santa Rosa, New Mexico, 3 July 1935) who became the 12th man on the moon. The crew were on the lunar surface for 74 hr 59½ min during this longest of lunar missions which took 12 days 13 hr 51 min on 7-19 Dec 1972.

First extra-terrestrial vehicle

The first wheeled vehicle landed on the Moon was *Lunokhod 1* which began its Earth-controlled travels on 17 Nov 1970. It moved a total of 10,54 km 6.54 miles on gradients up to 30° in the Mare Imbrium and did not become non-functioning until 4 Oct 1971. The lunar speed and distance record was set by the *Apollo 16* Rover with 11.2 mph 18 km/h downhill and 22.4 miles 33.8 km.

Closest approach to the Sun

The research spacecraft *Helios B* approached within 27 million miles 43.4 million km of the Sun, carrying both US and West German instrumentation on 16 Apr 1976.

Largest space object

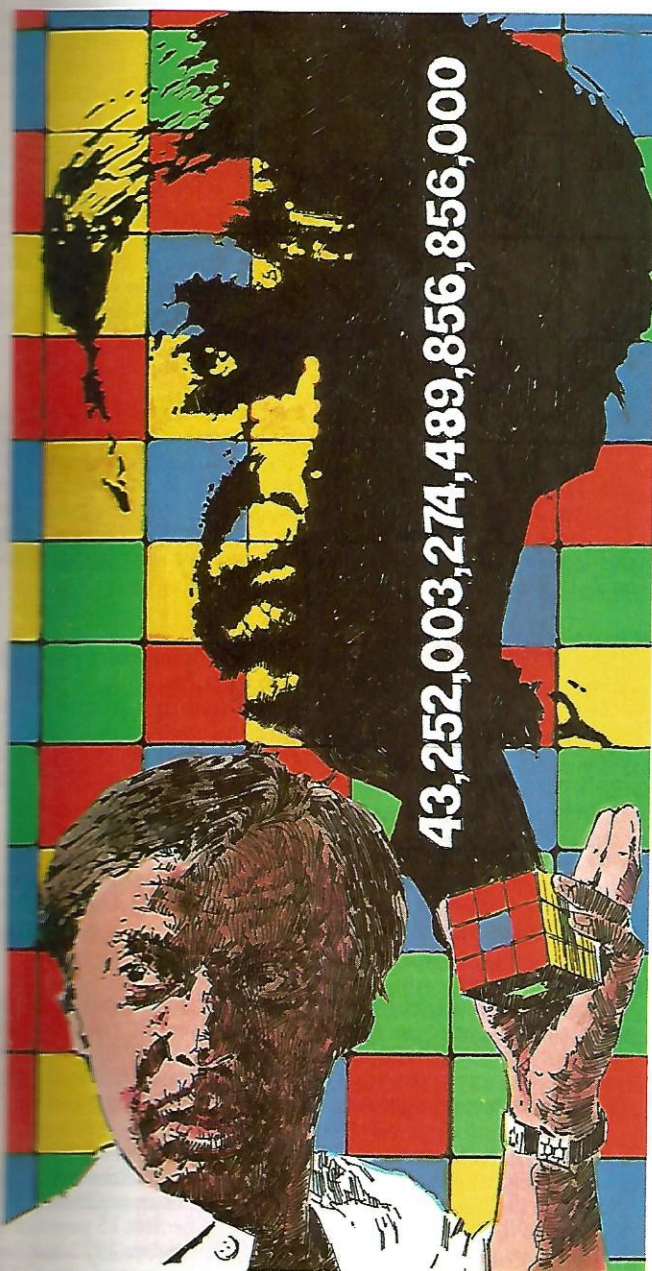
The heaviest object orbited is the *Apollo 15* (spacecraft plus third stage) which, prior to trans-lunar injection in parking orbit weighed 140 512 kg 138.29 tons. The 442 lb 200 kg US RAE (radio astronomy explorer) B or *Explorer 49* launched on 10 June 1973 has, however, antennae, 1500 ft 457 m from tip to tip.

Most expensive project

The total cost of the US manned space programme up to and including the lunar mission of *Apollo 17* has been estimated to be \$25,541,400,000 (then £9,823,150,000). The first 15 years of the USSR space programme from 1958 to September 1973 has been estimated to have cost \$45,000 million. The cost of the NASA Shuttle programme was \$9.9 billion (£4350 million) to the launch of *Columbia* on 12 Apr 1981.

5. The Scientific World

GUINNESS BOOK OF RECORDS



Numerology—cubism

1. ELEMENTS

All known matter in, on and beyond the Earth is made up of chemical elements. It is estimated that there are 10^{79} electrons in the known universe. The total of naturally-occurring elements so far detected is 94, comprising, at ordinary temperatures, two liquids, 11 gases and 81 solids. The so-called 'fourth state' of matter is plasma, when negatively charged electrons and positively-charged ions are in flux.

Lightest and heaviest sub-nuclear particles

By August 1980 the existence of 24 'stable particles, 42 meson resonance multiplets and 54 baryon resonance multiplets' was accepted, representing the possible eventual discovery of 224 particles and an equal number of anti-particles. The heaviest 'stable' particle fully accepted is the charmed lambda baryon, symbol Λ_c^+ , of mass 2273 ± 6 MeV and lifetime 7×10^{-13} sec, first identified in March 1975 at the Brookhaven National Laboratory, New Upton, Long Island, NY, USA. The heaviest particle known is the upsilon triple prime meson, symbol Y''' , of mass 10550 MeV, which consists of a bottom or beauty quark and its anti-quark, and which was first identified in April 1980 by two groups using the Cornell electron storage ring facilities at Cornell University, Ithaca, New York, USA. Sub-atomic concepts require that the masses of the graviton, photon, and neutrino should all be zero. Based on the sensitivities of various cosmological theories, upper limits for the masses of these particles are 7.6×10^{-67} g for the graviton; 3.0×10^{-53} g for the photon and 1.4×10^{-32} g for the neutrino (cf. 9.10953×10^{-28} g for the mass of an electron.) The neutrino, so named by Enrico Fermi (1901-54) was postulated in 1931 by Wolfgang Pauli and discovered by Frederick Reines in 1956.

Newest particles

In July-August 1980 two groups using the SPEAR electron storage ring facilities at the Stanford Linear Accelerator Center, Stanford University, Stanford, California, USA, announced the discovery of the charmed eta meson, symbol η_c , of mass 2980 MeV, which is the lowest ground-state of the combination of a charmed quark and its anti-quark.

Most and Least stable

In 1974 the proton was measured to be stable against decay for a lifetime in excess of 2×10^{30} years. Theoretical predictions under the 'grand unified theory' suggest the lifetime of a proton may be less than 1×10^{34} years! The least stable or shortest lived nuclear particles discovered are the four baryon resonances N (2600), N (3030), Δ (2850) and Δ (3230), all 1.6×10^{-24} sec.

Substance smelliest

The most evil smelling substance, of the 17,000 smells so far classified, must be a matter of opinion but ethyl mercaptan (C_2H_5SH) and butyl seleno-mercaptan (C_4H_9SeH), are powerful claimants, each with a smell reminiscent of a combination of rotting cabbage, garlic, onions and sewer gas.

Most expensive perfume

The retail prices of the most expensive perfumes tend to be fixed at public relations rather than economic levels. The most expensive fragrant ingredient in perfume is pure French middle note jasmine essence at £2900 per kg or £82.20p per oz. The key ingredient is muscone, a macrocyclic ketone, from natural musk oil which in 1980 sold for £15,000 per kg or £425 per oz. The most expensive perfume in the world is *De Berens No 1* retailing at £66.66 per $\frac{1}{3}$ oz 9.44 g.

Most potent poison

The rickettsial disease, Q-fever can be instituted by a single organism but is only fatal in 1 in 1000 cases. About 10 organisms of *Francisella tularensis* (formerly *Pasteurella tularensis*) can institute tularaemia variously called alkali disease, Francis disease or deerfly fever, and this is fatal in upwards of 10 cases in 1000.

Most powerful nerve gas

In the early 1950s substances known as V-agents, notably VX, 300 times more toxic than phosgene ($COCl_2$) used in World War I, were developed at the Chemical Defence Experimental Establishment, Porton Down, Wiltshire. V-agents are lethal if 0.4 mg is inhaled by an adult. Patents were applied for in 1962 and published in February 1974.

THE 107 ELEMENTS

There are 94 known naturally-occurring elements comprising, at ordinary temperatures, two liquids, 11 gases, 72 metals and 9 other solids. To date the discovery of a further 13 transuranic elements (Elements 95 to 107) has been claimed of which 9 are undisputed.

Category	Name	Symbol	Discovery of Element	Record
Commonest (lithosphere)	Oxygen	O	1771 Scheele (Germany-Sweden)	46.60% by weight
Commonest (atmosphere)	Nitrogen	N	1772 Rutherford (GB)	78.09% by volume
Commonest (extra-terrestrial)	Hydrogen	H	1776 Cavendish (GB)	90% of all matter
Rarest (of the 94)	Astatine	At	1940 Corson (US) <i>et al.</i>	1/100th oz 0.35 g in Earth's crust
Lightest	Hydrogen	H	1776 Cavendish (GB)	0.005612 lb/ft ³ 0.0008989 g/cm ³
Lightest (Metal)	Lithium	Li	1817 Arfwedson (Sweden)	33.30 lb/ft ³ 0.5334 g/cm ³
Densest ¹	Osmium	Os	1804 Tennant (GB)	1410 lb/ft ³ 22.59 g/cm ³
Heaviest (Gas)	Radon	Rn	1900 Dorn (Germany)	0.6274 lb/ft ³ 0.01005 g/cm ³ at 0°C
Newest ²	Unnilseptium	Uns	1976 Oganesyan <i>et al.</i> (USSR)	highest atomic number (element 107)
Purest	Helium	4He	1868 Lockyer (GB) and Janssen (France)	2 parts in 10 ¹⁵ (1978)
Hardest	Carbon	C	— prehistoric	Diamond allotrope, Knoop value 8400
Most Expensive	Californium	Cf	1950 Seaborg (US) <i>et al.</i>	Sold in 1970 for \$10 per µg
Most Stable ³	Tellurium	128Te	1782 von Reichenstein (Austro. Hung)	Half-life of 1.5 × 10 ²⁴ years
Least Stable	Lithium (isotope 5)	Li 5	1817 Arfwedson (Sweden)	Lifetime of 4.4 × 10 ⁻²² sec.
Most Isotopes	Caesium	Cs	1860 Bunsen & Kirchhoff (Germ.)	35
	Xenon	Xe	1898 Ramsay and Travers (GB)	35
Least Isotopes	Hydrogen	H	1776 Cavendish (GB)	3 (confirmed)
Most Ductile	Gold	Au	ante 3000 bc	1 oz drawn to 43 miles 1 g/2.4 km
Highest Tensile Strength	Boron	B	1808 Gay-Lussac and Thenard (France)	3.9 × 10 ⁶ lb/in ² 26.8 GPa
Lowest Melting/Boiling Point ⁴	Helium	4He	1895 Ramsay (GB)	-272.375°C under pressure 24.985 atm (2532 MPa) and -268.928°C
				3422°C and 5730°C
Highest Melting/Boiling Point	Tungsten	W	1783 J. J. & F. d'Elhuyar (Spain)	-5.8 × 10 ⁻⁵ cm/cm/deg C between 450-480°C
Largest Expansion (negative)	Plutonium	Pu	1940 Seaborg (US) <i>et al.</i>	(Delta prime allotrope (disc. 1953))
				1.0 × 10 ⁻⁶ cm/cm/deg C (at 20°C)
Lowest Expansion (positive)	Carbon (diamond)	C	— prehistoric	9.7 × 10 ⁻⁵ cm/cm/deg C (at 20°C)
Highest Expansion (metal)	Caesium	Cs	1860 Bunsen & Kirchhoff (Germ.)	1.94 × 10 ⁻³ cm/cm/deg C at 248.59°C
Highest Expansion (solid)	Neon	Ne	1898 Ramsay and Travers (GB)	naturally occurring isotope 17,000 × more toxic than plutonium 239
Most Toxic	Radium	224Ra	1898 The Curies and Bemont (France)	

¹ Work published by Robert H Crabtree (Yale University, USA) in 1978 that while the specific gravity of Osmium is 22.59 ± 0.02 that of Iridium is 22.57 ± 0.01 i.e. the difference is smaller than the experimental error involved.

² Provisional IUPAC name. Evidence alleging the existence of Elements 116, 124 and 126 published on 17 June 1976 subsequently was declared to have been misconceived. Unnilhexium (Unh) or element 106 was identified by Ghiorso (USA) *et al.* on 9 Sept 1974.

³ Double beta decay estimate. Alpha particle record is Samarium 148 at 8 × 10¹⁵ years and Beta particle record is Cadmium 113 at 9 × 10¹⁵ years.

⁴ Monatomic hydrogen H is expected to be a non-liquifiable superfluid gas.

CHEMICAL COMPOUNDS

It has been estimated that there are 4,040,000 described chemical compounds of which 63,000 are (1978) in common use.

Most Refractory	Tantalum Carbide TaC _{0.88}	Melts at 3990 deg C
Most Refractory (plastics)	Modified polyimides	900°F 482°C for short periods
Lowest Expansion	Invar metal (Ni-Fe alloy with C and Mn)	1.3 × 10 ⁻⁷ cm/cm/deg C at 20°C
Highest Tensile Strength	Sapphire whisker Al ₂ O ₃	6 × 10 ⁶ lb/in ² 42.7 GPa
Highest Tensile Strength (plastics)	Polyvinyl alcoholic fibres	1.4 × 10 ⁵ lb/in ² 1.03 GPa
Most Magnetic	Cobalt-copper-samarium Co ₃ Cu ₂ Sm	10,500 oersted coercive force
Least Magnetic alloy	Copper nickel alloy CuNi	963 parts Cu to 37 parts Ni
Most Pungent	Vanillaldehyde	Detectable at 2 × 10 ⁻⁸ mg/litre
Sweetest ¹	Talin from arils of katemfe (Thaumatococcus daniellii) discovered in W. Africa	6150 × as sweet as 1% sucrose
Bitterest	Bitrex or Benzyl diethyl ammonium benzoate	200 × as bitter as quinine sulphate
Most Acidic ²	Perchloric acid (HClO ₄)	pH value of normal solution tends to 0.
Most Alkaline	Caustic soda (NaOH) and potash (KOH) and tetramethylammonium hydroxide (N(CH ₃) ₄ OH)	pH value of normal solution is 14.
Highest Specific Impulse	Hydrogen with liquid fluorine	447 lb t/sec/lb 4382 N/sec/kg
Most Poisonous	Thiopentone (a barbiturate)	Intracardiac injection will kill in 1 to 2 sec
Highest Ductility in tension (max. superplasticity)	Pb38 Sn62	49½ times pre-stressed length by Ahmed and Langdon, Univ. of S. California, 1977

¹ Found in 1839, reported in 1852 but the protein thaumatococcus not isolated until 1972.

² The most powerful acid, assessed on its power as a hydrogen-ion donor, is a solution of antimony pentafluoride in fluorosulphonic acid—SbF₅ + FSO₃H. Concentrated hydrochloric acid HCL, an aqueous solution has a pH value tending to -1.

Most powerful drugs

The most powerful commonly available drug is d-Lysergic Acid Diethylamide tartrate (LSD-25, C₂₀H₂₅N₃O) first produced in 1938 for common cold research and as a hallucinogen by Dr Albert Hoffman (Swiss) on 16-19 Apr 1943. The most potent analgesic drug is the morphine-like R33799 confirmed in 1978 to have almost 12,000 times the potency of morphine. Interferon was reportedly available for \$10 US per millionth of a microgramme.

Most prescribed drug

The top-selling prescription drug in the world is the anti-ulcer drug Tagamet marketed by Smithkline-Beckman of Philadelphia, USA. The sales in 1981 were estimated at \$800 million.

Most absorbent substance

The US Department of Agriculture Research Service announced on 18 Aug 1974 that 'H-span' or Super Slurper composed of one half starch derivative and one fourth each of acrylamide and acrylic acid can when treated with iron retain water 1300 times its own weight.

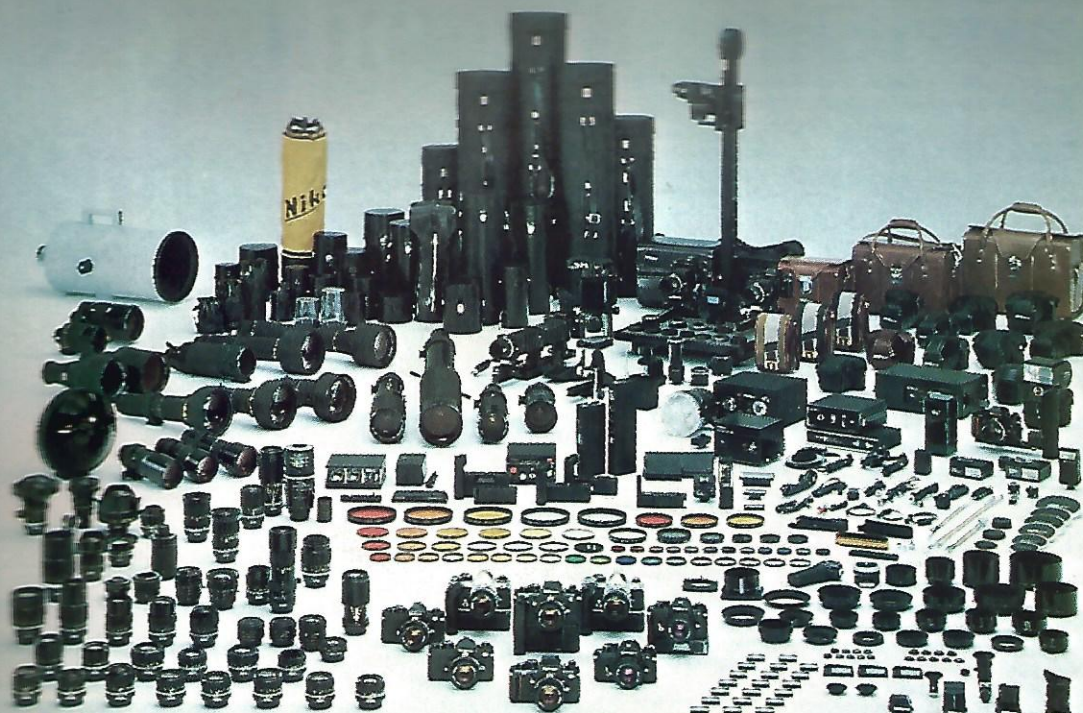
Finest powder

Particulate matter of 25-40 Å or 2.5 to 4.0 × 10⁻⁷ cm 1.0 to 1.5 × 10⁻⁷ in was reportedly produced by an electron beam evaporation process at the Atomic Energy Establishment, Harwell in October 1972. The paper was published by Dr P. RamaKrishnan.

2. DRINK

As from 1 Jan 1981 the strength of spirits has been expressed only in terms of percentage volume of alcohol at 20°C. Absolute or '100% vol' alcohol was formerly expressed to be 75.35 degrees over proof or 75.35°OP. In the USA proof is double the actual percentage of alcohol by volume at 60°F 15.6°C such that absolute alcohol is 200 per cent proof spirit. A 'hangover' is due to toxic congeners such as amyl alcohol (C₅H₁₁OH).

The complete range of Nikon Camera equipment, the most expensive marketed today at a list price of £78,076.30 + VAT (see p.83).



Most alcoholic

During independence (1918–40) the Estonian Liquor Monopoly marketed 98 per cent potato alcohol (196 proof US). In 31 US states *Everclear* 190 proof or 95% vol alcohol, is marketed by the American Distilling Co 'primarily as a base for home-made cordials'. Royal Navy rum, introduced in 1692, was 40° OP (79% vol) before 1948, but was reduced to 4.5° UP (under proof) or 46% vol, before its abolition on 31 July 1970.

Oldest wine

The oldest datable wine has been an amphora salvaged and drunk by Capt. Jacques Cousteau from the wreck of a Greek trader sunk in the Mediterranean c 230 BC. Wine jars recovered from the Pompeii eruption of AD 79 were found labelled *VESUVINUM*—the oldest known trade mark. A bottle of 1748 Rudesheimer Rosewein was auctioned at Christie's, London for £260 on 6 Dec 1979.

Beer Strongest world

The world's strongest and most expensive beer is Samichlaus Bier brewed by Brauerei Hurlimann of Zürich, Switzerland, which retails for Sw Fr 10 for a 33.3 cl bottle (equiv. to £4 per pint). It is 13.94 per cent alcohol by volume at 20°C with an original gravity of 1107.6°.

Beer Strongest Great Britain

The strongest regularly brewed beer in Britain is Thomas Hardy's brewed by Eldridge Pope & Co at their Dorchester Brewery, Dorset. It has an alcoholic content of 12.48 per cent by volume at 60° F and an original gravity of 1125.8°.

Beer Weakest

The weakest liquid ever marketed as beer was a sweet Ersatz beer which was brewed in Germany by Sunner, Colne-Kalk, in 1918. It had an original gravity of 1000.96° and a strength 1/30th that of the weakest beer now obtainable in the United Kingdom.

Most expensive wine

Record prices paid for single bottles usually arise when two or more self-promoters are seeking publicity. They bear little relation to the market value. The highest price paid for any bottle (meaning a container as opposed to a measure) of wine is \$31,000 (then £13,140) for a bottle of 1822 Château Lafite, bought by John Grisanti at the Heublein auction in San Francisco, USA on 28 May 1980 conducted by Michael Broadbent of Christie's. The US record is \$2000 (then £1000) a bottle (\$24,000 [then £12,000] for a case) of Napamedoc Cabernet, vintage 1979, by the Robert Mondavi Winery on 21 June 1981.

Greatest wine auction and wine tasting

The largest single sale of wine was conducted by Christie's of King Street, St James's, London on 10–11 July 1974 at Quaglini's Ballroom, London when 2325 lots comprising 432,000 bottles realised £962,190. The largest ever reported wine-tasting was that staged by the Wine Institute at St Francis Hotel, San Francisco, California on 17 July 1980 with 125 pourers, 90 openers and a consumption of 3000 bottles.

Most expensive liqueurs

The most expensive liqueur in France is *Eau de vie de pêche* at 190 F (now £17.00) for a 75 cl bottle at Fauchon in Paris.

Most expensive spirits

The most expensive bottle of spirits at auction is £780 for a magnum of *Grande Armée Fine Champagne Cognac, 1811* at Christie's Geneva on 13 Nov 1978. *Cognac Chateaufort la fait* (1865) retails for 2800 F (now £255) a bottle at Fauchon. In Britain *Hennessy Private Reserve Grande Champagne* retails for £120 (including VAT) for a standard bottle.

Largest bottles

The largest bottle normally used in the wine and spirit trade is the Jeroboam (equal to 4 bottles of champagne or, rarely, of brandy and from 5 to 6½ bottles of claret according to whether blown or moulded) and the Double Magnum (equal, since c. 1934 to 4 bottles of claret or, more rarely, red Burgundy). A complete set of Champagne bottles would consist of a ¼ bottle, through the ½ bottle, bottle, magnum, Jeroboam, Rehoboam, Methuselah, Salmanazar and Balthazar, to the Nebuchadnezzar, which has a capacity of 16 litres 28.14 pt, and is equivalent to 20 bottles. In May 1958 a 5 ft 152 cm tall sherry bottle with a capacity of 20½ Imperial gal 93.19 litres was blown in Stoke-on-Trent, Staffordshire. This bottle, with the capacity of 131 normal bottles, was named an 'Adelaide'.

Smallest bottles

The smallest and meanest bottles of liquor now sold are White Horse bottles of Scotch whisky containing 1.3 millilitres or 22 minims at 33 p a bottle or £2.16 per 'case' of 12.

Largest collections

The largest reported collection of unduplicated miniature bottles is one of 14,806 as at 28 May 1982 owned by Douglas Taverer of The Pines Hotel, Chippenham, Wilts.

The largest reported collection of distilled spirits or liqueurs in any bar is 1203 unduplicated labels collected by Ian Boasman at

Bruno French, Church Street, Preston, Lancashire audited in April 1982.

The world's greatest collection of whisky bottles is one of 3100 unduplicated labels assembled by Sgn Edward Giaccone at his Whiskyteca, Salo, Lake Garda, Italy.

Champagne cork flight

The longest distance for a champagne cork to fly from an untreated and unheated bottle 4 ft 1.22 m from level ground is 104 ft 6 in 31.85 m by George Thorward at Los Gatos, California, USA on 9 Dec 1979.

3. PHOTOGRAPHY

CAMERAS

Earliest

The earliest photograph was taken in the summer of 1826 by Joseph Nicéphore Niepce (1765–1833), a French physician and scientist. It showed the courtyard of his country house at Gras, near St Loup-de-Varennes. It probably took eight hours to expose and was taken on a bitumen-coated polished pewter plate measuring 7¾ in by 6½ in 20 × 16.5 cm. The earliest photograph taken in England was one of a diamond-paned window in Laycock (or Lacock) Abbey, Wiltshire, taken in August 1835 by William Henry Fox Talbot, MP (1800–77), the inventor of the negative-positive process. The negative of this was donated to the Science Museum, London in 1937 by his granddaughter Matilda. The world's earliest aerial photograph was taken in 1858 by Gaspard Félix Tournachon (1820–1910), *alias* Nadar, from a balloon near Villacoublay, on the outskirts of Paris, France.

Largest

The largest camera ever built is the 27 ton/tonne Rolls Royce camera built for Product Support (Graphics) Ltd, of Derby, England completed in 1959. It measures 8 ft 10 in 2.69 m high, 8 ft 3 in 2.51 m wide and 35 ft 10.66 m in length. The lens is a 63" f 15 Cooke Apochromatic. Its value after improvements in 1971 was in excess of £100,000.

Smallest

Apart from cameras built for intra-cardiac surgery and espionage, the smallest camera that has been marketed is the circular Japanese 'Petal' camera with a diameter of 1.14 in 2.9 cm and a thickness of 0.65 in 1.65 cm. It has a focal length of 12 mm 0.47 in. The BBC TV programme *Record Breakers* showed prints from this camera on 3 Dec 1974.

Fastest

In 1972 Prof. Basof of the USSR Academy of Sciences published a paper describing an experimental camera with a time resolution of 5×10^{-13} sec or ½ picosec. The fastest production camera in the world is the Imacon 675 manufactured by John Hadland (PI) Ltd of Bovingdon, Hertfordshire which is capable of taking pictures at a rate of 600 million per sec. Uses include laser, ballistic, detonic, plasma and corona research.

Most expensive camera

The most expensive complete range of camera equipment in the world is that of Nikon of Tokyo, Japan, who marketed in 1982 a range of 9 cameras with 74 lenses and 490 accessories. Fox Talbot of London quoted £78,076.30 plus £11,711.45 VAT for the whole range. The highest auction price for an antique camera is £21,000 for a J. B. Dancer stereo camera, patented in 1856 and sold at Christie's, South Kensington on 12 Oct 1977.

Most expensive photograph

The world's most expensive photograph at auction has been Ansel Adam's *Moonrise*, taken in New Mexico, USA in 1944. It sold for \$71,500 (then £39,720) in February 1981.

4. TELESCOPES

Earliest

Although there is evidence that early Arabian scientists under-

stood something of the magnifying power of lenses, their first use to form a telescope has been attributed to Roger Bacon (c. 1214–92) in England. The prototype of modern refracting telescopes was that completed by Johannes Lippershey for the Netherlands government on 2 Oct 1608.

Largest Reflector World

The largest telescope in the world is the alt-azimuth mounted 6 m 236.2 in telescope sited on Mount Semirodriki, near Zelenchukskaya in the Caucasus Mountains, USSR, at an altitude of 6830 ft 2080 m. Work on the mirror, weighing 70 tons/tonnes was not completed until the summer of 1974. Regular observations were begun on 7 Feb 1976 after 16 years work. The weight of the 42 m 138 ft high assembly is 840 tonnes 827 tons. Being the most powerful of all telescopes its range, which includes the location of objects down to the 25th magnitude, represents the limits of the observable Universe. Its light-gathering power would enable it to detect the light from a candle at a distance of 15,000 miles 24 000 km.

A design for a 500 ton 10 metre 393.7 inch reflector comprising 36 independently controlled fitting hexagonal mirrors was adopted in Oct 1980. If sited on Mauna Kea, Hawaii it would be expected to cost \$50 million and be completed by 1989. The design of a 25 m 984 in composite hexagonal reflector was announced by the USSR in August 1979.

Note: The attachment of an electronic charge-coupled device (CCD) increases the 'light-grasp' of a telescope by a factor up to 100 fold. Thus a 200 in 508 cm telescope becomes the equivalent of a 2000 in 5080 cm telescope.

Largest Reflector Great Britain

The largest British reflector is the Isaac Newton 98.2 in 249.4 cm reflector formerly installed at the Royal Greenwich Observatory, Herstmonceux Castle, East Sussex. It was built in Newcastle upon Tyne, Tyne and Wear, weighs 92 tons 93.5 tonnes, cost £641,000 and was inaugurated on 1 Dec 1967. It has been dismantled and re-erected on the 2423m 7949 ft high Roque de los Muchachos, La Palma, Canary Islands and will be operational from mid-1983. It is hoped that a 4.2 m 167.3 in reflector will also be sited at this new Northern Hemisphere Observatory.

Largest Refractor

The largest refracting (i.e. magnification by lenses) telescope in the world is the 62 ft 18.90 m long 40 in 101.6 cm telescope completed in 1897 at the Yerkes Observatory, Williams Bay, Wisconsin, and belonging to the University of Chicago, Illinois, USA. In 1900 a 125 cm 49.2 in refractor 54.85 m 180 ft in length was built for the Paris Exposition but its optical performance was too poor to justify attempts to use it. The largest in the British Isles is the 28 in 71.1 cm at the Royal Greenwich Observatory (then in London) completed in 1894.

Radio Largest steerable dish

Radio waves of extra-terrestrial origin were first detected by Karl Jansky of Bell Telephone Laboratories, Holmdel, New Jersey, USA using a 100 ft 30.48 m long shortwave rotatable antenna in 1932. The world's largest trainable dish-type radio telescope is the 100 m 328 ft diameter, 3000 ton 3048 tonnes assembly at the Max Planck Institute for Radio Astronomy of Bonn in the Effelsberger Valley, W. Germany; it became operative in May 1971. The cost of the installation begun in November 1967 was 36,920,000 DM (then £6,150,000).

Radio Largest Dish

The world's largest dish radio telescope is the partially-steerable ionospheric assembly built over a natural bowl at Arecibo, Puerto Rico, completed in November 1963 at a cost of about \$9,000,000 (then £3.75 million). The dish has a diameter of 1000 ft 304.80 m and covers 18½ acres 7.28 ha. Its sensitivity was raised by a factor of 1000 and its range to the edge of the observable Universe at some 15,000 million light-years by the fitting of new aluminium plates at a cost of \$8.8 million. Rededication was on 16 Nov 1974. The RATAN-600 radio telescope completed in the Northern Caucasus, USSR in 1976 has 895 metal mirror panels mounted in a circle 576 m 1890 ft across.

Radio Largest World

The world's largest radio telescopic installation is the US National Science Foundation VLA (Very Large Array). It is Y-shaped with each arm 13 miles 20.9 km long with 27 mobile antennae (each of 25 m 82 ft diameter) on rails. It is 50 miles 80 km west of Socorro in the Plains of San Augustin, New Mexico, and was dedicated on 10 Oct 1980 at a cost of \$78 million (now £41 million).

A computer-linked very long base-line array of 25 m 82 ft radio telescopes stretched over 4200 km 2600 miles on Latitude 49.3°N has been planned by the Canadian Astronomical Society.

Radio Largest Great Britain

The British Science Research Council 5 km radio telescope at Lord's Bridge, Cambridgeshire to be operated by the Mullard Radio Astronomy Observatory of Cambridge University will utilise eight mobile 42 ft 12.80 m rail-borne computer-controlled dish aerials, which will be equivalent to a single steerable dish 5 km 3 miles 188 yd in diameter. The project cost more than £2,100,000 and was completed in 1973.

Solar

The world's largest solar telescope is the 480 ft 146.30 m long McMath telescope at Kitt Peak National Observatory near Tucson, Arizona, USA. It has a focal length of 300 ft 91.44 m and an 80 in 2.03 m heliostat mirror. It was completed in 1962 and produces an image measuring 33 in 83.8 cm in diameter.

Observatory Highest

The highest altitude observatory in the world is the University of Denver's High Altitude Observatory at an altitude of 14,100 ft 4297 m, opened in 1973. The principal instrument is a 24 in 60.48 cm Ealing Beck reflecting telescope.

Observatory Oldest

The oldest astronomical observatory building extant in the world is the Chomsong-dae built in AD 632 in Kyongju, South Korea.

Planetaria World

The ancestor of the planetarium is the rotatable Gottorp Globe, built by Andreas Busch in Denmark between 1654 and 1664 to the orders of Olearius, court mathematician to Duke Frederick III of Holstein. It is 34.6 ft 10.54 m in circumference, weighs nearly 3½ tons/tonnes and is now preserved in Leningrad, USSR. The stars were painted on the inside. The earliest optical installation was not until 1923 in the Deutsches Museum, Munich, by Zeiss of Jena, Germany. The world's largest planetarium, is in Moscow, USSR, and has a diameter of 82½ ft 25.15 m.

Planetaria Great Britain

The United Kingdom's first planetarium was opened at Madame Tussaud's, Marylebone Road, London, on 19 Mar 1958. Accurate images of 8900 stars (some below naked eye magnitude) are able to be projected on the 70 ft 21.33 m high copper dome.

5. NUMEROLOGY

In dealing with large numbers, scientists use the notation of 10 raised to various powers to eliminate a profusion of noughts. For example, 19,160,000,000,000 miles would be written 1.916×10^{13} miles. Similarly, a very small number, for example 0.0000154324 of a gramme, would be written 1.5432×10^{-5} . Of the prefixes used before numbers the smallest is 'atto-' from the Danish atten for 18, indicating a trillionth part (10^{-18}) of the unit, and the highest is 'exa' (Greek, hexa, six), symbol E, indicating six groups of 3 zeros 10^{18} or a trillion (UK) or a quintillion (US) fold.

Highest numbers

The highest lexicographically accepted named number in the system of successive powers of ten is the centillion, which is 10 raised to the power 600, or one followed by 600 noughts in the British system or 10^{303} in the US system. The highest named

number outside the decimal notation is the British *unquintillion*, which is equal to 10^{600} or 100 zero-vigintillions (British system) or 100 quattuorquadrillions (US system).

The number 10^{100} (10,000 sexdecillion [UK] or 10 duotrigintillion [US]) is designated a Googol. The term was devised by Dr Edward Kasner (US) (d. 1955). Ten raised to the power of a Googol is described as a Googolplex. Some conception of the magnitude of such numbers can be gained when it is said that the number of electrons in some models of the observable Universe does not exceed 10^{87} .

The highest number ever used in a mathematical proof is a bounding value published in 1977 and known as Graham's number. It concerns bichromatic hypercubes and is inexpressible without the special 'arrow' notation, devised by Knuth in 1976, extended to 64 layers.

Longest Roman Numeral

The date requiring most Roman letters is AD 1888 with 13, viz MDCCCLXXXVIII. It was used on the entrance to the former High Court of New South Wales, now the Darlinghurst Courthouse completed in that year in Taylor Square, Sydney Australia. This drew the comment that the building would become equally famous for the length of its sentences.

Prime numbers

A prime number is any positive integer (excluding 1) having no integral factors other than itself and unity, e.g. 2, 3, 5, 7 or 11. The lowest prime number is thus 2. The highest known prime number is $2^{44497} - 1$ discovered on 8 Apr 1979, after a two month long run on a Cray One computer, at the University of California's Lawrence Livermore Laboratory, by Harry Nelson, 47 and David Slowinski, 25. The number contains 13,395 digits.

Perfect numbers

A number is said to be perfect if it is equal to the sum of its divisors other than itself, e.g. $1 + 2 + 4 + 7 + 14 = 28$. The lowest perfect number is 6 ($1 + 2 + 3$). The highest known and the 26th so far discovered, is $(2^{44497} - 1) \times 2^{44496}$. It is a consequence of the highest known prime (see above).

Most innumerate

The most innumerate people are the Nambiquara of the north west Matto Grosso of Brazil who lack any system of numbers. They do however have a verb which means 'they are two alike'.

Most accurate and most inaccurate version of 'pi'

The greatest number of decimal places to which π has been calculated is 2,000,000 by Dr Kazunori Miyoshi (b. 15 Oct 1946) using a FACOM M200 computer in 137.3 hours at the University of Tsukuba, Japan on 18 June–10 July 1981. The published value to two million places, in what has been described as the world's most boring 800 page publication, was 3.141592653589793 ... (omitting the next 1,999,975 places) ... 1457297909. In 1897 the General Assembly of Indiana enacted in House Bill No. 246 that π was *de jure* 4.

Earliest measures

The earliest known measure of weight is the *beqa* of the Amratan period of Egyptian civilisation c. 3,800 BC found at Naqada, United Arab Republic. The weights are cylindrical with rounded ends from 188.7 to 211.2 g 6.65–7.45 oz. The unit of length used by the megalithic tomb-builders in Britain c. 3500 BC appears to have been 2.72 ± 0.003 ft 82.90 cm ± 0.09 cm. This was deduced by Prof. Alexander Thom (b. 1894) in 1966.

Time measure Longest

The longest measure of time is the *kalpa* in Hindu chronology. It is equivalent to 4320 million years. In astronomy a cosmic year is the period of rotation of the sun around the centre of the Milky Way galaxy, i.e. about 225 million years. In the Late Cretaceous Period of c. 85 million years ago the Earth rotated faster so resulting in 370.3 days per year while in Cambrian times some 600 million years ago there is evidence that the year contained 425 days.

Time measure Shortest

Owing to variations in the length of a day, which is estimated to

be increasing irregularly at the average rate of about a milli-second per century due to the Moon's tidal drag, the second has been redefined. Instead of being 1/86,400th part of a mean solar day, it has, since 1960, been reckoned as 1/31,556,925.9747th part of the solar (or tropical) year at AD 1900, January 0. 12 hr, Ephemeris time. In 1958 the second of Ephemeris time was computed to be equivalent to $9,192,631,770 \pm 20$ cycles of the radiation corresponding to the transition of a caesium 133 atom when unperturbed by exterior fields. The greatest diurnal change recorded has been 10 milliseconds on 8 Aug 1972 due to the most violent solar storm recorded in 370 years of observations. The shortest blip of light is one of 0.2 of a pico-second (0.2×10^{-12} sec) produced by the Center of Laser Studies, University of Southern California in August 1978. In that time light travels 0.06 mm or 0.0023 in.

Smallest linear unit

The shortest unit of length is the atto-metre which is 1.0×10^{-16} cm.

Longest slide rule

The world's longest slide rule is one 323 ft 9.5 in 98,69 m in length completed on 11 Nov 1979 by Greg Maggs and Robert Kolstad at the University of Illinois College of Law Building in Champaign, Illinois, USA.

Cubism

A pioneer of Rubik's cube speed contest (with standardized dislocation and inspection time) was one in Munich, West Germany on 13 Mar 1981 in a 38.0 sec tie between Ronald Brinkman and Jury Fröschl. Ernő Rubik (Hungary) patented the device in 1975 with 43,252,003,274,489,856,856,000 possible combinations. For latest information, see Stop Press.

6. PHYSICAL EXTREMES

(Terrestrial)

Temperature Highest

The highest man-made temperatures yet attained are those produced in the centre of a thermonuclear fusion bomb, which are of the order of 300,000,000 – 400,000,000°C. Of controllable temperatures, the highest effective laboratory figure reported is 67 million degrees at the University of Rochester's Laser Energetics Laboratory, on 22 May 1979. Prior to 1963 a figure of 3000 million°C was reportedly achieved in the USSR with Ogra injection-mirror equipment.

Temperature Lowest

The lowest temperature reached is 5×10^{-8} Kelvins above absolute zero attained in a two stage nuclear demagnetization cryostat at the Helsinki University of Technology, Otaniemi, Finland by the team of Prof. Olli V. Lounasmaa (b. 1920) and announced in March 1979. Absolute or thermodynamic temperatures are defined in terms of ratios rather than as differences reckoned from the unattainable absolute zero, which on the Kelvin scale is -273.15°C or -459.67°F . Thus the lowest temperature ever attained is 1 in 5.5×10^9 of the melting point of ice (0°C or 273.15 K or 32°F).

The lowest equilibrium temperature ever attained is 0.0003 K by nuclear refrigeration in a 1.4 kg 3 lb copper specimen by Prof. Lounasmaa (see above) and his team at the Helsinki University of Technology, Otaniemi, Finland, on 17 Apr 1974.

Highest pressures

The highest sustained laboratory pressures yet reported are of 1.72 mega bars (11,000 tons force/in² 160 GPa) achieved in the giant hydraulic diamond-faced press at the Carnegie Institution's Geophysical Laboratory, Washington DC reported in June 1978. This laboratory announced solid hydrogen achieved at 57 kilobars pressure on 2 Mar 1979. If created, metallic hydrogen is expected to be silvery white but soft with a density of 1.1 g/cm³. The pressure required for the transition is estimated by H. K. Mao and P. M. Bell to be 1 Megabar at 25°C. Using dynamic methods and impact speeds of up to 18,000 mph 29 000 km/h, momentary pressures of 75,000,000 atmospheres

(490,000 tons/in² 7000 GPa) were reported from the United States in 1958.

Highest vacuum

The highest (or 'hardest') vacuums obtained in scientific research are of the order of 10^{-14} torr at the IBM Thomas J. Watson Research Center, Yorktown Heights, New York, USA in October 1976 in a cryogenic system with temperatures down to -269°C -452°F . This is equivalent to depopulating (baseball-sized) molecules from 1 metre apart to 80 km apart or from 1 yard to 50 miles.

Fastest centrifuge

Ultra-centrifuges were invented by Theodor Svedberg (b. 30 Aug 1884) (Sweden) in 1923. The highest man-made rotary speed ever achieved and the fastest speed of any earth-bound object is 4500 mph 7250 km/h by a swirling tapered 6 in 15.2 cm carbon fibre rod in a vacuum at Birmingham University, England reported on 24 Jan 1975.

Most powerful microscope

The world's most powerful microscope was announced by Dr Lawrence Bartell and Charles Ritz of the University of Michigan in July 1974 with an image magnification of 260 million fold. It uses an optical laser to decode holograms produced with 40 KeV radiation and has produced photographs of electron clouds of atoms of neon and argon.

Highest note

The highest note yet attained is one of 60 000 megahertz (60 GHz) (60,000 million vibrations/sec), generated by a 'laser' beam striking a sapphire crystal at the Massachusetts Institute of Technology in Cambridge, Massachusetts, USA, in September 1964.

Hottest Flame

The hottest flame that can be produced is from carbon subnitride (C_4N_2) which at one atmosphere pressure is calculated to reach 5261 K.

Loudest noise

The loudest noise created in a laboratory is 210 decibels or 400,000 acoustic watts reported by NASA from a 48 ft 14.63 m steel and concrete horn at Huntsville, Alabama, USA in October 1965. Holes can be bored in solid material by this means.

Quietest place

The 'dead room', measuring 35 ft by 28 ft 10.67 × 8.50 m in the Bell Telephone System laboratory at Murray Hill, New Jersey, USA, is the most anechoic room in the world, eliminating 99.98 per cent of reflected sound.

Finest balance

The most accurate balance in the world is the Sartorius Model 4108 manufactured in Göttingen, W. Germany, which can weigh objects of up to 0.5 g to an accuracy of 0.01 µg or 0.00000001 g which is equivalent to little more than one sixtieth of the weight of the ink on this full stop.

Lowest viscosity

The California Institute of Technology, USA announced on 1 Dec 1957 that there was no measurable viscosity, i.e. perfect flow, in liquid helium II, which exists only at temperatures close to absolute zero (-273.15°C or -459.67°F).

Lowest friction

The lowest coefficient of static and dynamic friction of any solid is 0.02, in the case of polytetrafluoroethylene ($[\text{C}_2\text{F}_4]_n$), called PTFE—equivalent to wet ice on wet ice. It was first manufactured in quantity by E. I. du Pont de Nemours & Co Inc in 1943, and is marketed from the USA as Teflon. In the United Kingdom it is marketed by ICI as Fluon.

In the centrifuge at the University of Virginia a 30 lb 13.60 kg rotor magnetically supported has been spun at 1000 rev/sec in a vacuum of 10^{-6} mm of mercury pressure. It loses only one revolution per second per day, thus spinning for years.

Most powerful electric current

The most powerful electric current generated is that from the

Zero capacitor at the Los Alamos Scientific Laboratory, New Mexico, USA. If fired simultaneously the 4032 capacitors would produce for a few microseconds twice as much current as that generated elsewhere on Earth.

Highest voltage

The highest potential difference ever obtained in a laboratory has been 32 ± 1.5 million volts by the National Electrostatics Corporation at Oak Ridge, Tennessee, USA on 17 May 1979.

Highest velocity

The highest velocity at which any solid visible object has been projected is 150 km/sec 335 000 mph in the case of a plastic disc at the Naval Research Laboratory, Washington DC, reported in August 1980.

Most powerful particle accelerator

The 2 kilometre 6562 ft diameter proton synchrotron at the Fermi National Accelerator Laboratory east of Batavia, Illinois, USA is the highest energy 'atom-smasher' in the world. On 14 May 1976 an energy of 500 billion (5×10^{11}) electron volts was attained. Work on doubling the energy to nearly 1 Tera electron volts or 1000 GeV was begun in July 1979. This involves 1000 super-conducting magnets maintained at a temperature of -452°F -268.8°C by means of the world's largest 4500 litre 990 gal per hour helium liquefying plant which began operating on 18 Apr 1980.

The £32 million CERN intersecting storage rings (ISR) project near Geneva, Switzerland started on 27 Jan 1971, using two 28 GeV proton beams, and is designed to yield the equivalent of 1700 GeV or 1.7 TeV (1.7 million million electron volts) in its centre of mass experiments.

The aim of CERN to collide beams of protons and antiprotons in their Super Proton Synchrotron (SPS) at $270\text{ GeV} \times 2 = 540\text{ GeV}$ was achieved at 4.55 a.m. on 10 July 1981. This is the equivalent of striking a fixed target with protons at 150 TeV or 150 000 GeV.

Largest bubble chamber

The largest bubble chamber in the world is the \$7 million installation completed in October 1973 at Weston, Illinois. It is 15 ft 4.57 m in diameter and contains 7259 gal 33 000 litres of liquid hydrogen at a temperature of -247°C with a super-conductivity magnet of 30,000 gauss.

Heaviest magnet

The heaviest magnet in the world is one measuring 60 m 196 ft in diameter, with a weight of 36,000 tons/tonnes for the 10 GeV synchrophasotron in the Joint Institute for Nuclear Research at Dubna, near Moscow, USSR. Intermagnetics General Corporation announced in 1975 plans for a 180 kG vanadium-gallium magnet.

Magnetic fields Strongest and weakest

The strongest magnetic field strength achieved has been one of 301 kilogauss 30.1 teslas at the Francis Bitter National Magnet Laboratory at Massachusetts Institute of Technology, by Mathias J. Leupold and Robert J. Weggel, announced in July 1977. The outer magnet is of super-conducting niobium-titanium.

The weakest magnetic field measured is one of 8×10^{-11} gauss in the heavily shielded room at the Francis Bitter National Magnet Laboratory, Cambridge, Massachusetts, USA. It is used for research by Dr David Cohen into the very weak magnetic field generated in the heart and brain.

Finest cut

Biological specimens embedded in epoxy resin can be sectioned by a glass knife microtome under ideal conditions to a thickness of 1/875,000th of an inch 2.9×10^{-5} mm or 29 μm .

Sharpest objects and Smallest Tubes

The sharpest objects yet made are glass micropipette tubes used in intracellular work on living cells. Techniques developed and applied by Prof Kenneth T. Brown and Dale G. Flaming of the Department of Physiology, University of California, San Fran-

cisco achieved by 1977 bevelled tips with an outer diameter of 0.02 μm and 0.01 μm inner diameter. The latter is smaller than the smallest known nickel tubing by a factor of 340 and is 6500 times thinner than human hair.

Most powerful laser beams

The first illumination of another celestial body was achieved on 9 May 1962, when a beam of light was successfully reflected from the Moon by the use of a maser (microwave amplification by stimulated emission of radiation) or laser (light amplification by stimulated emission of radiation) attached to a 48 in 121.9 cm telescope at Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. The spot was estimated to be 4 miles 6.4 km in diameter on the Moon. The device was propounded in 1958 by Dr Charles Hard Townes (born 1915) of the USA. A maser light flash is focused into liquid nitrogen-cooled ruby crystal. Its chromium atoms are excited into a high energy state in which they emit a red light which is allowed to escape only in the direction desired. Such a flash for 1/5000th of a second can bore a hole through a diamond by vaporization at $10,000^\circ\text{C}$, produced by 2×10^{23} photons.

The 'Shiva' laser was reported at the Lawrence Livermore Laboratory, California to be concentrating 2.6×10^{13} watts into a pinhead-sized target for 9.5×10^{-11} in a test on 18 May 1978.

Brightest light

The brightest steady artificial light sources are 'laser' beams with an intensity exceeding the Sun's 1,500,000 candles/in² 232 500 candelas/cm² by a factor well in excess of 1000. In May 1969 the USSR Academy of Sciences announced blast waves travelling through a luminous plasma of inert gases heated to 90,000 K. The flare-up for up to 3 micro-seconds shone at 50,000 times the brightness of the Sun viz. 75,000 million candles/in² 11 625 million candelas/cm². Of continuously burning sources, the most powerful is a 200 kW high-pressure xenon arc lamp of 600,000 candle-power, reported from the USSR in 1965.

The synchrotron radiation from a 4×0.5 in 100×2.5 mm slit in the SPEAR high energy physics plant at the end of the 2 mile 3.2 km long Stanford Linear Accelerator, California, USA has been described as the world's most powerful light beam.

The most powerful searchlight ever developed was one produced during the 1939-45 war by the General Electric Company Ltd at the Hirst Research Centre in Wembley, Greater London. It had a consumption of 600 kW and gave an arc luminance of 300,000 candles/in² 46 500 candelas/cm² and a maximum beam intensity of 2,700,000,000 candles from its parabolic mirror (diameter 10 ft 3.04 m).

Most durable light

The average bulb lasts for 750-1,000 hr. There is some evidence that a carbon filament bulb burning in the Fire Department, Livermore, south Alameda County, California has been burning since 1901.

Highest Measured Frequency

The highest frequency ever directly measured is a visible yellow light at $5.20206528 \times 10^{14}$ hertz (c. 520 terahertz or million million cycles per second) in February 1979 by the US National Bureau of Standards Boulder Laboratories and the National Research Council Laboratory in Ottawa, Canada.

Longest echo

The longest recorded echo in any building in Great Britain is one of 15 sec following the closing of the door of the Chapel of the Mausoleum, Hamilton, Strathclyde built in 1840-55.

Largest wind tunnel World

The world's largest wind tunnel is a low-speed tunnel with a 40×80 ft 12.19×24.38 m test section built in 1944 at the Ames Research Center, Moffett Field, California, USA. The tunnel encloses 800 tons/tonnes of air and cost approximately \$7,000,000 (then £1,735,000). The maximum volume of air that can be moved is 60,000,000 ft³ 1 700 000 m³ per min. On 30 July 1974 NASA announced an intention to increase it in size to 80×120 ft 24.38×36.57 m for 345 mph speeds with a

135,000hp 136,900 cc system. The most powerful is the 216,000hp 219,000 cc installation at the Arnold Engineering Test Center at Tullahoma, Tennessee, USA opened in September 1956. The highest Mach number attained with air is Mach 27 at the works of the Boeing Company in Seattle, Washington State, USA. For periods of micro-seconds, shock Mach numbers of the order of 30 (22,830 mph 36,735 km/h) have been attained in impulse tubes at Cornell University, Ithaca, New York State, USA.

Largest wind tunnel *Great Britain*

The most powerful wind tunnel in the United Kingdom is the intermittent compressed air type installation at the BAC plant at Warton, Lancashire which can be run at Mach 4, which is equivalent to 3044 mph 4898 km/h at sea level.

Smallest hole

Inco Nickel Co. were reported in August 1977 to have produced a hole with a diameter of a ten millionth of an inch 0,000004 mm or one thousand times smaller than a human hair.

A hole of 40 Å was shown visually using a JEM 100C electron microscope and Quantel Electronics devices at the Dept. of Metallurgy, Oxford on 28 Oct. 1979. To find such a hole is equivalent to finding a pinhead in a haystack with sides of 1.2 miles 1,93 km.

Most Accurate Physical Device

The accuracy of the caesium beam frequency standard approaches 8 parts in 10^{14} compared to 2 parts in 10^{13} for the methane-stabilised helium-neon laser and 6 parts in 10^{13} for the hydrogen maser.

7. GEMS AND OTHER PRECIOUS MATERIALS

PRECIOUS STONE RECORDS

Note: The carat was standardised at 205 mg in 1877. The metric carat of 200 mg was introduced in 1914.

Largest

Diamond (pure crystallised carbon)
3106 metric carats (over 1¼ lb)—*The Cullinan*, found by Mr Gray on 25 Jan 1905 in the Premier Mine, Pretoria, South Africa.

Largest Cut Stone

530.2 metric carats of 74 facets. Cleaved from *The Cullinan* in 1908, by Jak Asscher of Amsterdam and polished by Henri Koe known as *The Star of Africa* or *Cullinan I* and now in the Royal Sceptre. The Cullinan II is of 317.40 carats. Third on the list of the 55 diamonds of more than 100 ct is the Great Mogul of 280 old carats lost in the sack of Delhi in 1739 and arguably the most valuable object ever lost.

Other records

Diamond is the *hardest* known naturally-occurring substance, with 5 times the indentation hardness of the next hardest mineral, corundum (Al_2O_3). The peak hardness value on the Knoop scale is 8400 compared with an average diamond of 7000. The rarest colour for diamond is blood red. The largest example is a flawless 5.05 ct stone from South Africa now in a private collection in the U.S. The diamond per carat record price of \$113,000 was set by the 41.3 ct 'Polar Star' bought in Geneva for \$4.6 million (then £1.95 million) on 21 Nov 1980.

Emerald (green beryl) [$\text{Be}_3\text{Al}_2(\text{SiO}_3)_6$]

86,136 carat natural beryl Gleim emerald. Found in Carnaíba, Brazil, Aug 1974. Carved by Richard Chan (Hong Kong). Appraised at \$1,292,000 (£718,000) in 1982.

\$520,000 (then £305,000) paid for an 18.35 ct ring sold at Sotheby Parke Bernet, New York, in Apr. 1977.

Sapphire (corundum any colour but red) (Al_2O_3)

2302 carat stone found at Anakie, Queensland, Australia, in c. 1935, now a 1318 carat head of President Abraham Lincoln (1809–65).

1444 carat black star stone carved from 2097 carats in 1953–5 into a bust of General Dwight David Eisenhower (1890–1969).

Note: both the sapphire busts are in the custody of the Kazanjian Foundation of Los Angeles, California, USA. Auction record for a single stone was set by a step-cut sapphire of 66.03 carats at £579,300 from the Rockefeller collection at Sotheby's Zurich on 8 May 1980.

Ruby (red corundum) (Al_2O_3)

3421 carat broken stone reported found in July 1961 (largest piece 750 carats).

1184 carat natural gem stone of Burmese origin. The largest star ruby is the 138.72 carat Rosser Reeves stone at the Smithsonian Institution.

Since 1955 rubies have been the world's most precious gem attaining a price of up to £4000 per carat by 1969. A world record carat price of \$100,639 (then £46,600) was set at Christie's sale in Geneva in November 1979 for a 4.12 carat caspian-shaped ruby.

The ability to make corundum prisms for laser technology up to over 12 in 30 cm in length seems to have little bearing on the market for natural gems.



The world's most expensive tiara made of emeralds and diamonds auctioned for SwF 2,700,000 (then £743,800) at Sotheby's Zürich in November 1979.

RECORDS FOR OTHER PRECIOUS MATERIALS

Largest

Pearl (*Molluscan concretion*)
14 lb 1 oz 6.37 kg 9½ in 24 cm long by 5½ in 14 cm in diameter—*Pearl of Laoitze*

Where Found

At Palawan, Philippines, 7 May 1934 in shell of giant clam.

Notes On Present Location, etc.

The property since 1936 of Wilburn Dowell Cobb until his death, it was valued at \$4,080,000 in July 1971. On 15 May 1980 it was bought at auction in San Francisco by Peter Hoffman, a jeweller of Beverly Hills, California for \$200,000 (then £85,000).

Opal ($\text{SiO}_2\text{nH}_2\text{O}$)

220 troy oz (yellow-orange).

Andamooka, South Australia.

The Andamooka specimen (34,215 carats), which was unearthed by a bulldozer, is in two filling pieces making a block 11 × 10 × 5 in 28 × 25 × 12.5 cm. It is owned by the Palgrave Corp. since September 1969, is displayed in Sydney and is valued in excess of \$A1,000,000 (£500,000).

RECORDS FOR OTHER PRECIOUS MATERIALS Continued

Largest	Where Found	Notes On Present Location, etc.
Rock Crystal (quartz) SiO_2 Bel: 105 1/4 lb 40,48 kg 12 1/2 in 32,7 cm diameter, the Warner sphere	Burma, (originally a 1000 lb 450 kg piece).	US National Museum, in Washington, DC.
Topaz $\text{Al}_2\text{SiO}_5(\text{F},\text{OH})_2$ Brazilian Princess' 21,327 carat 221 facets.	Light blue: from Brazil.	Exhibited by Smithsonian Institution, November 1978. Valued at \$1,066,350 or \$50 per carat. Cut from a 79 lb 35,8 kg crystal. World's largest faceted stone.
Amber (Coniferous fossil resin) 33 lb 10 oz 15,25 kg.	Reputedly from Burma acquired in 1860.	Bought by John Charles Bowring (d. 1893) for £300 in Canton, China. Natural History Museum, London, since 1940.
Turquoise monolith $(\text{CuAl}_6(\text{PO}_4)_4(\text{OH})_8 \cdot 4\text{H}_2\text{O})$ 218 lb 98,8 kg.	Riverside County, California, 17 Jan 1975.	Found by Chester Jastromb and Kenneth Casper. Original weight was probably c. 250 lb 113,4 kg.
Nephrite jade $\text{Ca}_2(\text{Mg}, \text{Fe})_5(\text{Si}_4\text{O}_{11})_2(\text{OH})_2$ Boulder of 143 tons/tonnes and 21,300 ft ³ 600 m ³	In China. Reported 17 Sept. 1978.	Jadeite can be almost any colour excepting red or blue.
Marble (Metamorphosed CaCO_3) 30 tons/tonnes (single slab)	Quarried at Yule, Colorado, USA.	A piece of over 45 tons/tonnes was dressed from this slab for the coping stone of the Tomb of the Unknown Soldier in Arlington National Cemetery, Virginia, USA.
Nuggets—Gold (Au) 7580 oz. (472 1/2 lb 214,32 kg) (reef gold) Holtermann Nugget	Beyers & Holtermann Star of Hope Gold Mining Co., Hill End, NSW, Australia, 19 Oct 1872.	The purest large nugget was the <i>Welcome Stranger</i> , found at Moliagul, Victoria, Australia, which yielded 2246 troy oz 69,92 kg of pure gold from 2280 1/4 oz 70,92 kg.
Silver (Ag) 2750 lb troy	Sonora, Mexico.	Appropriated by the Spanish Government before 1821.

OTHER GEMS RECORDS:

Largest Crystal of Gem Quality:

A 520,000 carat (2 cwt 5 lb 103,8 kg) aquamarine, $[\text{Be}_3\text{Al}_2(\text{SiO}_3)_6]$ found near Marambaia, Brazil in 1910. Yielded over 200,000 carats of gem quality cut stones.

Rarest Gem Mineral:

Painite ($\text{CaZrB}(\text{Al}_3\text{O}_{18})$) discovered by A C D Pain near Ohngaing, Mogok, Burma in 1951. Deep red crystals of 1.31 and 2.12 gm are in the British Museum (Natural History), London and a third of 0.34 gm at the Gemological Institute of America.

Densest Gem Mineral:

Stibiotantalite $[(\text{SbO})_2(\text{Ta},\text{Nb})_2\text{O}_6]$ a rare brownish-yellow mineral found in San Diego County, California, has a density of 7.46. The alloy platiniridium has a density of more than 22.0.

Smallest Brilliant Cut Diamond:

A 57 facet diamond of 0.0012 of a carat (0.24 milligrams) by A. Van Moppes & Zoon (Diamant) BV of Amsterdam certified on 26 Jan 1949.

The Holtermann nugget, the largest gold nugget ever found, was mined at Hill End, NSW, Australia on 19 Oct 1872.



Guinness Superlatives has published a more specialist book *Guinness Book of the Facts and Feats* (28.95) by John F. Macnamara MBE.

Earliest World

Evidence of Palaeolithic art was first found in 1834 at Chaffaud Vienne, France by Brouillet when he recognised an engraving of two deer on a piece of flat bone from the cave, dating to c 20,000 BC. The number of stratigraphically dated cave art is limited. The oldest known dated examples come from La Ferrassie, near Les Eyzies in the Périgord, France, in layers dated to c 25,000 BC. Blocks of stone were found with engraved animals and female symbols; some of the blocks also had symbols painted in red ochre. Pieces of ochre with ground facets have been found at Lake Mungo, NSW in a context *ante* 30,000 BC but there is no evidence whether these were used for body-painting or art.

Britain

The earliest date attributed to markings on a cave wall in Britain is 13,000 BC in the case of a cervid head spotted by Dr. Tom Rogers (Canada) in Cave 5615 in the cliffs above Symonds Yat East on the English side of the River Wye in Hereford and Worcester in June 1980. It is from the Upper Palaeolithic period.

Largest World All time

Panorama of the Mississippi, completed by John Banvard (1815–91) in 1846, showing the river for 1200 miles 1930 km in a strip probably 5000 ft 1525 m long and 12 ft 3.65 m wide, was the largest painting in the world, with an area of more than 1.3 acres 0.52 ha. The painting is believed to have been destroyed when the rolls of canvas, stored in a barn at Cold Spring Harbor, Long Island, New York State, USA, caught fire shortly before Banvard's death on 16 May 1891.

Existing

The largest known painting now in existence is *The Battle of Gettysburg*, completed in 1883, after 2½ years of work, by Paul Philippoteaux (France) and 16 assistants. The painting is 410 ft 125 m long, 70 ft 21.3 m high and weighs 5.36 tons 5.45 tonnes. It depicts the climax of the Battle of Gettysburg, in southern Pennsylvania, USA, on 3 July 1863. In 1964 the painting was bought by Joe King of Winston-Salem, North Carolina, USA after being stored by E. W. McConnell in a Chicago warehouse since 1933.

'Old Master'

The largest 'Old Master' is *Il Paradiso*, painted between 1587 and 1590 by Jacopo Robusti, alias Tintoretto (1518–94), and his son Domenico (1565–1637) on Wall 'E' of the Sala del Maggior Consiglio in the Palazzo Ducale (Doge's Palace) in Venice, Italy. The work is 22 m 72 ft 2 in long and 7 m 22 ft 11½ in high and contains more than 100 human figures.

Largest Great Britain

The largest painting in Great Britain is the giant oval *Triumph of Peace and Liberty* by Sir James Thornhill (1676–1734), on the ceiling of the Painted Hall in the Royal Naval College, Greenwich. It measures 106 ft 32.3 m by 51 ft 15.4 m and took 20 years (1707–1727) to complete.

A painting 6050 ft² 562 m² in area and weighing more than a ton was painted for the 4th European Youth Games under the direction of David A. Judge and to the design of Norman G. Warner in Colchester, Essex between 29 Oct 1975 and 24 May 1976 by 365 people.

World's largest Poster

The largest recorded poster is a greeting measuring 53 ft 3 in × 166 ft 16.23 × 50.6 m delivered to Spalding College Center, Louisville, Kentucky, USA, on its 60th anniversary on 3 Oct 1980 bearing a 'Happy Birthday' inscription and the college's Pelican mascot.

Most valuable

The 'Mona Lisa' (*La Gioconda*) by Leonardo da Vinci (1452–1519) in the Louvre, Paris, was assessed for insurance purposes at the highest ever figure of \$100,000,000 (then £35.7 million) for its move for exhibition in Washington, DC, and New York City, NY, USA, from 14 Dec 1962 to 12 Mar 1963. However, insurance was not concluded because the cost of the closest secur-

6. The Arts and Entertainments

GUINNESS BOOK OF RECORDS



Current top-selling authoress



The only painter in history to have sold over 100,000 portraits, Morris Katz of Greenwich Village, New York City.

ity precautions was less than that of the premiums. It was painted in c. 1503-7 and measures 77 × 53 cm 30.5 × 20.9 in. It is believed to portray Mona (short for Madonna) Lisa Gherardini, the wife of Francesco del Giocondo of Florence, who disliked it and refused to pay for it. Francis I, King of France, bought the painting for his bathroom in 1517 for 4000 gold florins or 492 oz 15,30 kg of gold worth some £235,000 (mid-1981).

HIGHEST PRICE

Auction price World

The highest price ever bid in a public auction for any painting is \$6,400,000 (then £2,689,076) for *Juliet and Her Nurse* painted by Joseph Mallord William Turner (1775-1851) of London when in Venice, Italy in 1836 and sold on 30 May 1980 at Sotheby Parke Bernet's, New York City, to an undisclosed collector possibly a 'woman in white' from Argentina. The painting had been sold by the Whitney Museum in New York and is 3 ft × 4 ft 91 × 122 cm.

Private Treaty

It was announced on 12 Nov 1980 that the National Gallery, London had acquired Albrecht Altdorfer's *Christ Taking Leave of His Mother*, valued by Christie's at 'about £6 million', from the trustees of the Wernher collection at Luton Hoo, Bedfordshire.

By A Woman Artist

The highest price ever paid for a painting by a female artist is \$770,000 (then £428,000), at Christie's, New York on 19 May 1982, for *La Lisense* by Mary Cassatt (b. Pennsylvania, USA, 1844-d. 1926). She worked mainly from Paris.

Miniature portrait

The highest price ever paid for a portrait miniature is the £75,000 given by an anonymous buyer at a sale held by Sotheby's, London on 24 Mar 1980 for a miniature of Jane Broughton, aged 21, painted on vellum by Nicholas Hilliard (1547-1619) in 1574. The painted surface measures 1.65 in 42 mm in diameter.

Modern painting

The record for a 20th century painting was set at \$5.3 million (then £2,950,000) at Sotheby Parke, Bernet, New York City on 21 May 1981 by Picasso's 1901 *Self Portrait: Yo Picasso* sold to an

anonymous dealer. The 19th century record is \$5,200,000 (then £2,270,700) for Van Gogh's *Le Jardin du Poète, Arles* sold by Christie's in New York City on 13 May 1980.

Living artist World

The highest price paid for paintings in the lifetime of the artist is \$1,950,000 (then £812,500) paid for the two canvases *Two Brothers* (1905) and *Seated Harlequin* (1922) by Pablo Diego José Francisco de Paula Juan Nepomuceno Crispín Crispiano de la Santísima Trinidad Ruiz y Picasso (1881-1973) of Spain. This was paid by the Basle City Government to the Staechelin Foundation to enable the Basle Museum of Arts to retain the painting after an offer of \$2,560,000 (£1,066,666) had been received from the United States in December 1967. The highest price at auction for a work by a now living artist is £360,000 at Christie's, London on 30 Mar 1981 for Salvador Dali's *Le Sommeil*.

British and Irish

The highest price for any painting by a living United Kingdom born artist is \$350,000 (then £167,000) for the painting *Triptych* (in memory of George Dyer) by Francis Bacon (b. Dublin, Ireland, 1909, then part of the United Kingdom) sold on 18 May 1981 at Christie's, New York City, USA.

Drawing

The highest price ever attached to any drawing is £804,361 for the cartoon *The Virgin and Child with St John the Baptist and St Anne*, measuring 54½ in × 39¼ in 137 × 100 cm, drawn in Milan, probably in 1499-1500, by Leonardo da Vinci (1452-1519) of Italy, retained by the National Gallery in 1962. Three United States bids of over \$4,000,000 (then £1,428,570) were reputed to have been made for the cartoon.

MOST PROLIFIC

Painter

Picasso was the most prolific of all painters in a career which lasted 78 years. It has been estimated that Picasso produced about 13,500 paintings or designs, 100,000 prints or engravings, 34,000 book illustrations and 300 sculptures or ceramics. His life-time oeuvre has been valued at £500 million.

Morris Katz (b. 1932) of Greenwich Village, New York City is the most prolific painter of saleable portraits in the world. His sales total as of 21 April 1982 was 110,600. Described as the 'King of Schlock Art', he sells his paintings 'cheap and often'.

Portraitist

John A. Wismont Jr. (b. New York City, 20 Sept 1941), formerly of Disneyland, Anaheim, California, painted 45,423 water colour paintings in his career (up to 1978) including 9853 in 1976.

Most repetitious painter

Antonio Bin of Paris has painted the *Mona Lisa* on some 300 occasions. These sell for up to £1000 apiece.

Oldest and youngest RA

The oldest ever Royal Academician has been (Thomas) Sidney Cooper C.V.O., who died on 8 Feb 1902 aged 98 yr 136 days, having exhibited 266 paintings over the record span of 69 consecutive years (1833-1902). The youngest ever RA has been Mary Moser (1744-1819) (later Mrs Hugh Lloyd), who was elected on the foundation of the Royal Academy in 1768 when aged 24.

Youngest exhibitor

The youngest ever exhibitor at the Royal Academy of Arts Annual Summer Exhibition has been Lewis Melville 'Gino' Lyons (b. 30 Apr 1962). His *Trees and Monkeys* was painted on 4 June 1965, submitted on 17 Mar 1967 and exhibited to the public on 29 Apr 1967.

Largest gallery

The world's largest art gallery is the Winter Palace and the neighbouring Hermitage in Leningrad, USSR. One has to walk 15 miles 24 km to visit each of the 322 galleries, which house nearly 3,000,000 works of art and objects of archaeological interest. The world's largest modern art museum is the Georges Pompidou National Centre for Art and Culture opened in Paris in 1977 with 17 700 m² 183,000 ft² of floor space.

HIGHEST-PRICE PAINTINGS—Progressive records

Price	Equivalent 1982 Value	Painter, title, sold by and sold to	Date
£8500	£216,500	Antonio Correggio's <i>The Magdalen Reading</i> (in fact spurious) to Elector Friedrich Augustus II of Saxony.	1746
£8500	£260,000	Raphael's <i>The Sistine Madonna</i> to Elector Friedrich Augustus II of Saxony.	1759
£16,000	£295,000	Van Eyck's <i>Adoration of the Lamb</i> , 6 outer panels of Ghent altarpiece by Edward Solby to the Government of Prussia.	1821
£24,600*	£665,000	Murillo's <i>The Immaculate Conception</i> by estate of Marshall Soult to the Louvre (against Czar Nicholas I) in Paris.	1852
£70,000	£2,930,000	Raphael's <i>Ansidei Madonna</i> by the 8th Duke of Marlborough to the National Gallery.	1885
£100,000	£4,245,000	Raphael's <i>The Colonna Altarpiece</i> by Seldemeyer to J. Pierpoint Morgan.	1901
£102,880	£3,333,000	Van Dyck's <i>Elena Grimaldi-Cattaneo</i> (portrait) by Knoedler to Peter Widener (1834–1915).	1906
£102,880	£2,500,000	Rembrandt's <i>The Mill</i> by 6th Marquess of Lansdowne to Peter Widener.	1911
£116,500	£3,160,000	Raphael's smaller <i>Panshanger Madonna</i> by Joseph (later Baron) Duveen (1869–1939) to Peter Widener.	1913
£310,400	£8,365,000	Leonardo da Vinci's <i>Benois Madonna</i> to Czar Nicholas II in Paris.	1914
£821,429*	£5,440,000	Rembrandt's <i>Aristotle Contemplating the Bust of Homer</i> by estate of Mr and Mrs Alfred W. Erickson to New York Metropolitan Museum of Art.	1961
£1,785,714	£8,825,000	Leonardo da Vinci's <i>Ginevra de' Benci</i> (portrait) by Prince Franz Josef II of Liechtenstein to National Gallery of Art, Washington DC, USA.	1967
£2,310,000*	£9,475,000	Velázquez's <i>Portrait of Juan de Pareja</i> by the Earl of Radnor to the Wildenstein Gallery, New York.	1970
£2,729,000	£3,410,000	Turner's <i>Juliet and Her Nurse</i> by Trustees of Whitney Museum, New York to undisclosed bidder.	1980

*Indicates price at auction, otherwise prices were by private treaty.

Finest brush

The finest standard brush sold is the 000 in Series 7 by Winsor and Newton known as a 'triple goose'. It is made of 150–200 Kolinsky sable hairs weighing 15 mg 0.000529 oz.

MURALS

Earliest

The earliest known murals on man-made walls are those at Çatal Hüyük in southern Anatolia, Turkey, dating from c. 5850 BC.

Largest

The largest logo and mural painting in the world is the American Revolution Bicentennial symbol, on the curved roof of the Arizona Veterans Memorial Coliseum, Phoenix, Arizona. It occupies 110,000 ft² 10 219 m² or more than 2½ acres 1.0 ha. It was painted over in 1977. After being outlined by aid of a computer, it took 45 man days, under the supervision of its designer John M. Glitsos, to apply the necessary 870 gallons 3955 l of patriotic (red, white and blue) paint on 18–26 Aug 1973.

A ground mural measuring 1400 ft 426.7 m long by 100 ft 30.4 m wide named Yellow Brick Road—Leisure Time, painted on a disused runway near the Tamiami Stadium, South Dade, Florida USA was completed on 18 Mar 1976. A wall mural measuring 260 metres long and 2 metres tall 853 ft × 6½ ft, comprising 108 panels from drafts by children was painted from June to December 1980 around St. David's Square, Swansea, West Glamorgan in Wales.

Largest mosaic

The world's largest mosaic is on the walls of the central library of the Universidad Nacional Autónoma de México, Mexico City. There are four walls, the two largest measuring 12,949 ft² 1203 m² each representing the pre-Hispanic past. The largest Roman mosaic in Britain is the Woodchester Pavement, Gloucestershire of c. AD 325, excavated in 1793, now recovered with protective earth until its 8th showing due in 1983. It measures 48 ft 10 in 14.88 m square comprising 1½ million tesserae.

Largest cartoon

The largest cartoon ever exhibited was one covering five storeys (50 × 150 ft 15 × 45 m) of a University of Arizona building drawn by Dr Peter A. Kesling for Mom 'n Dad's Day 1954.

MUSEUMS

Oldest

The oldest museum in the world is the Ashmolean Museum in Oxford built in 1679.

Largest

The largest museum in the world is the American Museum of Natural History on 77th to 81st Streets and Central Park West, New York City, NY, USA. Founded in 1874, it comprises 19 interconnected buildings with 23 acres 9 ha of floor space. The largest museum in the United Kingdom is the British Museum (founded in 1753), which was opened to the public in 1759. The main building in Bloomsbury, London, was built in 1823 and has a total floor area of 17.57 acres 7.11 ha.

2. SCULPTURE

Earliest World

The earliest known examples of sculpture are the so-called Venus figurines from Aurignacian sites, dating to c. 25,000–22,000 BC, e.g. the famous Venus of Willendorf from Austria and the Venus of Brassempouy (Landes, France). A piece of ox rib found in 1973 at Pech de l'Aze, Dordogne, France in an early Middle Paleolithic layer of the Riss glaciation c. 105,000 BC has several engraved lines on one side, thought to be possibly intentional. A churingo or curved ivory plaque rubbed with red ochre from the Middle Palaeolithic Mousterian site at Tata, Hungary has been dated to 100,000 BC by the thorium/uranium method.

Great Britain

The earliest example of an engraving found in Britain is of a horse's head on a piece of rib-bone from Robin Hood Cave, Creswell Crag, Derbyshire. It dates from the Upper Palaeolithic period (c. 15,000 to 10,000 BC). The earliest Scottish rock carving from Lagalochoan, Strathclyde dates from c. 3000 BC.

Most expensive World and Ancient

The highest price ever paid for a sculpture is \$3,900,000 (then £2,400,000) paid by private treaty in London in early 1977 by J. Paul Getty's Museum in California for the 4th century BC bronze statue of a youth attributed to the school of Lysippus. It was found by fishermen on the seabed off Faro, Italy in 1963. The £23 million Museum, with 38 galleries, opened in Malibu in January 1974, is the world's most heavily endowed with £700 million.

Living sculptor

The highest price paid for the work of a living sculptor is the \$1,265,000 (then £702,780) given at Sotheby's Parke-Bernet Galleries, New York on 21 May 1982 for the 75 in 190.5 cm long elmwood *Reclining figure* by Henry Moore, OM, CH, (b. Castleford, West Yorkshire, 30 July 1898).

Largest

The world's largest sculptures are the mounted figures of Jefferson Davis (1808–89), Gen Robert Edward Lee (1807–70) and Gen Thomas Jonathan ('Stonewall') Jackson (1824–63), covering 1.33 acres 0.5 ha on the face of Stone Mountain, near Atlanta, Georgia. They are 90 ft 27.4 m high. Roy Faulkner was on the mountain face for 8 years 174 days with a thermo-jet torch working with the sculptor Walker Kirtland Hancock and other helpers from 12 Sept 1963 to 3 Mar 1972. When completed the world's largest sculpture will be that of the Indian chief Tashunca-uitco (c. 1849–77), known as Crazy Horse, of the Oglala tribe of the Dakota or Nadowessieux (Sioux) group. The sculpture was begun on 3 June 1948 near Mount Rushmore, South Dakota, USA. A projected 561 ft 170 m high and 641 ft 195 m long, it has required blasting 6,250,000 tons 6 860 000 tonnes of stone and is the life work of one man, Korczak Ziolkowski. The horse's nostril will be 50 ft 15.2 m deep and 35 ft 10.7 m in diameter.

Ground figures

In the Nazca Desert, south of Lima, Peru there are straight lines (one more than 7 miles 11.2 km long), geometric shapes and shapes of plants and animals drawn on the ground sometime between 100 BC and AD 700 for an uncertain but probably religious, astronomical, or even economic, purpose by a not precisely identified civilization. They were first detected from the air in c. 1928.

Hill figures

In August 1968 a 330 ft 100 m tall figure was found on a hill above Tarapacá, Chile.

The largest human hill carving in Britain is the 'Long Man' of Wilmington, East Sussex, 226 ft 68 m in length. The oldest of all White Horses in Britain is the Uffington White Horse in Oxfordshire, dating from the late Iron Age (c. 150 BC) and measuring 374 ft 114 m from nose to tail and 120 ft 36 m from ear to heel.

Most massive mobile

The most massive mobile is *White Cascade* weighing 8 tons/tonnes and measuring 100 ft 30.48 m from top to bottom installed on 24–25 May 1976 at the Federal Reserve Bank of Philadelphia, Pennsylvania, USA. It was designed by Alexander Calder (b. 1898), whose first mobiles were exhibited in Paris in 1932.

3. LANGUAGE & LITERATURE

Earliest

Anthropologists have evidence that the truncated pharynx of Neanderthal man precluded his speaking anything akin to a modern language any more than an ape or a modern baby. Cro-Magnon man of 40,000 BC had however developed an efficient vocal tract. Clay tablets of the neolithic Danubian culture discovered in December 1966 at Tartaria, Moros River, Romania have been dated to the fifth or fourth millennium BC. The tablets bear symbols of bows and arrows, gates and combs. Writing tablets bearing an early form of the Elamite language dating from 3500 BC were found in south-eastern Iran in 1970. Tokens or tallies from Tepe Asiab and Ganji-I-Dareh Tepe in Iran have however been dated to 8500 BC.

Oldest

The written language with the longest continuous history is Egyptian from the earliest hieroglyphic inscriptions on the palette of Narmer dated to c. 3100 BC to Coptic used in Churches at the present day more than 5000 years later. Hieroglyphs were used only until AD 394 and thus may be overtaken by Chinese characters as the most durable script in the 21st century.

Oldest words in English

Some as yet unpublished research indicates some words of a pre-Indo-European substrate survive in English—apple (apal), bad (bad), gold (gol) and tin (tin).

Commonest language

Today's world total of languages and dialects still spoken is about 5000 of which some 845 come from India. The language spoken by more people than any other is Northern Chinese, or Mandarin, by an estimated 68 per cent of the population, hence 675 million people in 1981. The so-called national language (*Guóyǔ*) is a standardised form of Northern Chinese (*Běifānghuà*) as spoken in the Peking area. This was alphabetised into *zhìyīn fùhào* of 37 letters in 1918. In 1958 the *pinyin* system, which is a phonetic pronunciation guide, was introduced. The next most commonly spoken language and the most widespread is English, by an estimated 400,000,000 in mid-1981. English is spoken by 10 per cent or more of the population in 37 sovereign countries.

In Great Britain and Ireland there are six indigenous tongues: English, Cornish, Scots Gaelic, Welsh, Irish Gaelic, and Romany (Gipsy). Of these English is, of course, predominant. Mr Edward (Ned) Maddrell (1877–1974) of Glen Chass, Port St Mary, Isle of Man, died as the last islander whose professed

tongue was Manx. Cornish, now happily saved, came within an ace of extinction but a dictionary was published in 1887, four years before the death of the then last fluent speaker John Devey. In the Channel Islands, apart from Jersey and Guernsey *normand*, there survive words of Sarkese or *Sérchais* in which the Parable of the Sower, as recited by some fishermen, was noted and published by Prince Louis Lucien Bonaparte (1813–91) in 1862.

Rarest language

Languages in which no-one can converse because there is only one speaker left are themselves dwindling in number. Eyak is still spoken in south-east Alaska by two aged sisters if they meet. 'Rosa', the last pure blooded Yaghan, from Tierra del Fuego, was said in February 1982 to be very weak and 88 years old.

Most complex

The following extremes of complexity have been noted: Chipewewa, the North American Indian language of Minnesota, USA, has the most verb forms with up to 6000; Tillamook, the North American Indian language of Oregon, USA, has the most prefixes with 30; Tabassaran, a language in Daghestan, USSR, uses the most noun cases with 35, while Eskimaux use 63 forms of the present tense and simple nouns have as many as 252 inflections. In Chinese the 40 volume *Chung-wén Tà Tz'u-tiē* dictionary lists 49,905 characters. The fourth tone of 'i' has 84 meanings, varying as widely as 'dress', 'hiccough' and 'licentious'. The written language provides 92 different characters of 'i'. The most complex written character in Chinese is that representing *xiè* consisting of 64 strokes meaning 'talkative'. The most complex in current use is *yù* with 32 strokes meaning to urge or implore.

Most and least irregular verbs

Esperanto was first published by its inventor Dr Ludwig Zamenhof (1859–1917) of Warsaw in 1887 without irregular verbs and is now estimated (by text book sales) to have a million speakers. The even earlier interlanguage Volapük, invented by Johann Martin Schleyer (1831–1912), also has absolutely regular configuration. Standard Swahili though designed to be strictly regular has 3 irregular imperatives. According to *The Morphology and Syntax of Present-day English* by Prof. Olu Tomori, English has 283 irregular verbs. This total, however, includes at least 30 which have been added merely with a prefix.

Rarest and commonest sounds

The rarest speech sound is probably the sound written *ř* in Czech which occurs in very few languages and is the last sound mastered by Czech children. In the southern Bushman language !xo there is a click articulated with both lips, which is written *ǀ*. The *l* sound in the Arabic word *Allah*, in some contexts, is pronounced uniquely in that language. The commonest sound is the vowel *a* (as in the English father); no language is known to be without it.

Literature, smallest

Of written languages, that with the smallest literature is Tyrrhenian, also known as Lemnian, once spoken on the island of Lemnos and believed to be related to Etruscan. The only surviving fragment is a 10-line inscription from the sixth century BC.

Vocabulary

The English language contains about 490,000 words plus another 300,000 technical terms, the most in any language, but it is doubtful if any individual uses more than 60,000. Those in Great Britain who have undergone a full 16 years of education use perhaps 5000 words in speech and up to 10,000 words in written communications. The membership of the International Society for Philosophical Enquiry (no admission for IQ's below 148) have an average vocabulary of 36,250 words.

Greatest linguist

If the yardstick of ability to speak with fluency and reasonable accuracy is adhered to, it is doubtful whether any human could maintain fluency in more than 20–25 languages concurrently or achieve fluency in more than 40 in a lifetime.

The most multi-lingual living person in the world is Georges Henri Schmidt (b. Strasbourg, France, 28 Dec 1914), the Chief

of the UN Terminology Section in 1965-71. The 1975 edition of *Who's Who in the United Nations*, listed 'only' 19 languages because he was then unable to find time to 'revive' his former fluency in 12 others. Britain's greatest linguist is George Campbell (b. 1913), who retired from the BBC Overseas Service where he worked, with 39 languages.

Historically the greatest linguists have been proclaimed as Cardinal Mezzofanti (1774-1849) (fluent in 26 or 27), Professor Rask (1787-1832), Sir John Bowring (1792-1872) and Dr Harold Williams of New Zealand (1876-1928), who had been fluent in 28 languages.

ALPHABET

Earliest

The development of the use of an alphabet in place of pictograms occurred in the Sinaitic world between 1700 and 1500 BC. This western Semitic language developed the consonantal system based on phonetic and syllabic principles. The oldest letter is 'O', unchanged in shape since its adoption in the Phoenician alphabet c. 1300 BC. The newest letters added to the English alphabet, are 'j' and 'v' which are of post-Shakespearean use c. 1630. Formerly they were used only as variants of 'i' and 'u'. There are 65 alphabets now in use.

Longest and shortest

The language with most letters is Cambodian with 72 (including useless ones) and Rotokas in central Bougainville Island has least with 11 (just a, b, e, g, i, k, o, p, r, t and u).

WORLDS LONGEST WORDS

Japanese ¹	Chi-n-chi-ku-ri-n (12 letters) —a very short person (slang)
French	Anticonstitutionnellement (25 letters) —anticonstitutionally. Anthropoclimatologiquement? (26 letters) —anthropoclimatologically
Croatian	Prijetolonasljednikovica (25 letters) —wife of an heir apparent.
Italian	Precipitevolissimamente (26 letters) —as fast as possible.
Portuguese	inconstitucionalissimamente (27 letters) —with the highest degree of unconstitutionality.
Russian	ryentgyenoelyektrokardiografichesko (33 Cyrillic letters, transliterating as 38) —of the radioelectrocardiographic.
Hungarian	Megszentsegtelenitetlensegeskedeseitkert (44 letters) —for your unprofaneable actions.
Turkish ⁵	Cekoslovakyalıfastıramadıkdanmızdanmıymissiniz (47 letters) —are you not of that group of persons that we were said to be unable to Czechoslovakianise?
Dutch ⁵	Kindercarnavalsoptochtvoorbereidingswerkzaanheden (49 letters) —preparation activities for a children's carnival procession
Mohawk ³	tkanuhstasrihsranuhwe'tsraaksahsarakatatsrayeri' (50 letters) —the praising of the evil of the liking of the finding of the house is right.
Icelandic ⁵	Haestarréttarmálafutningsmannsskriftofustúlkútidyralkillinn
German ^{4,5}	Donaudampfschiffahrtselectricitaetenhauptbetriebswerkbauunterbeamtengesellschaft (81 letters) —The club for subordinate officials of the head office management of the Danube steamboat electrical services (Name of a pre-war club in Vienna).
Swedish ⁵	Spårvagnsaktiebolagsskennsutskjutarefackföreningspersonalbeklädnadsmagasinsförrådsföreltaren (94 letters) —Manager of the depot for the supply of uniforms to the personnel of the track cleaners' union of the tramway company.

- Patent applications sometimes harbour long compound 'words'. An extreme example is one of 13 kana which transliterates to the 40 letter Kyūkitsūrohekimenfuchakunenryōsekisanryō meaning 'the accumulated amount of fuel condensed on the wall face of the air intake passage'.
- Not accepted by *savants* to be an acceptable French word.
- Lengthy concatenations are a feature of Mohawk. Above is an example.
- The longest dictionary word in every day usage is Kraftfahrzeugreparaturwerkstätten (33 letters or 34 if the ä is written as ae) meaning motor vehicle repair shops (or service garages).
- Agglutinative words not found in standard dictionaries.

Most and least consonants and vowels

The language with most distinct consonantal sounds is the Caucasian language Ubyx, with 85, and that with least is Rotokas, with only 6 consonants. The language with the most vowels is Sedang, a central Vietnamese language with 55 distinguishable vowel sounds and that with the least is the Caucasian language Abkhazian with two such. The record in written English for consecutive vowels is 6 in the musical term *euouae*. The Estonian word *jäääärne*, meaning the edge of the ice, has the same 4 consecutively. Voiauai, a language in Pará State, Brazil consists solely of 7 vowels. The English word 'latchstring' has 6 consecutive consonants, but the German word *Angstschweiss* has 8.

Largest letters

The largest permanent letters in the world are the giant 600 ft 183 m letters spelling READYMIX on the ground in the Nullarbor near East Balladonia, Western Australia. This was constructed in December 1971.

Smallest Letters

The 16 letters MOLECULAR DEVICES have been etched into a salt crystal by an electron beam so that the strokes were only 2 to 3 mm wide—the width of 20 hydrogen atoms. This was done by Michael Isaacson at Cornell University in February 1982.

WORDS

Longest words World

The longest word ever to appear in literature occurs in *The Ecclesiastusae*, a comedy by Aristophanes (448-380 BC). In the Greek it is 170 letters long but transliterates into 182 letters in English, thus: lopadotemachoselachogaleokranioleipsanodrimhypotrimmatosilphioparaomelitokatakechymenokichlepkossyphophattoperisteralektryonoptekhephallioikigklopeleiolagoiosiraiobaphetraganopterygon. The term describes a fricassee of 17 sweet and sour ingredients including mullet, brains, honey, vinegar, pickles, marrow and ouzo (a Greek drink laced with anisette).

A compound word of 195 sanskrit characters (which transliterates into 428 letters in the Roman alphabet) describing the region near Kanci, Tamil Nadu, India appears in a 16th century work by Tirumalāmbā, queen of Vijayanagara.

English

The longest word in the Oxford English Dictionary is floccipaucinihilipilification (alternatively spelt in hyphenated form with 'n' in seventh place), with 29 letters, meaning 'the action of estimating as worthless', first used in 1741, and later by Sir Walter Scott (1771-1832). Webster's Third International Dictionary lists among its 450,000 entries: pneumonoultramicroscopicsilicovolcanoconiosis (47 letters) the plural of a lung disease contracted by some miners.

The nonce word used by Dr Edward Strother (1675-1737) to describe the spa waters at Bristol was aqueosalinocalcalinoceraceoaluminosocupreovitriolic of 52 letters.

The longest regularly formed English word is praetertranssubstantiationally (37 letters), used by Mark McShane in his novel *Untimely Ripped*, published in 1963. The medical term hepaticocholangiocholecystenterostomies (39 letters) refers to the surgical creations of new communications between gallblad-

ders and hepatic ducts and between intestines and gallbladders. The longest words in common use are disproportionableness and incomprehensibilities (21 letters). Interdenominationalism (22 letters) is found in Webster's Dictionary and hence perhaps interdenominationalistically (28 letters) is permissible.

Longest palindromes

The longest known palindromic word is *saippuakivikauppias* (19 letters), the Finnish word for a dealer in lye (i.e. caustic soda). The longest in the English language is *redivider* (9 letters). The nine-letter word, *Malayalam*, is a proper noun given to the language of the Malayali people in Kerala, southern India while *Kanakanak* near Dillingham, Alaska is a 9 lettered palindromic place-name. The nine letter word ROTAVATOR is a registered trade mark belonging to Howard Machinery Ltd. The contrived chemical term *detarrated* has 11 letters. Some baptismal fonts in Greece and Turkey bear the circular 25 letter inscription ΝΥΝΟΝ ΑΝΟΜΗΜΑΤΑ ΜΗ ΜΟΝΑΝ ΟΨΙΝ meaning 'wash (my) sins not only (my) face'. This appears at St Mary's Church, Nottingham, St Paul's, Woldingham, Surrey and other churches. The longest palindromic composition devised is one of 40,000 words completed by Edward Benbow of Bewdley, Hereford & Worcs. in January 1981. It begins 'Anon now, even odder, I have made lines . . . ' and hence predictably ends ' . . . Senile dam, Eva, Hired Don. Eve won, Nona'.

Longest scientific name

The longest scientific name is that of protein resulting from a fusion of the repressor of β -galactosidase and β -galactosidase published in October 1978. It consists of 4059 letters in its abbreviated code form and more than 8000 letters in its full form. The first nine letters are 'Methionyl . . .'. It is anticipated the decoding of biological macromolecules will eventually produce even larger names.

Longest anagrams

The longest non-scientific English words which can form anagrams are the 18-letter transpositions 'conservationists' and 'conversationalists'. The longest scientific transposals are *cholecystoduodenostomy/duodenocholecystostomy* and *hydro-pneumopericardium/pneumohydropericardium* each of 22 letters.

In his research into anagrams A. J. Capper has found only one 4 letter word with 13 and one 5 letter word with 28 anagrams—these are 'aber' and 'aster'.

Longest abbreviation

The longest known abbreviation is S.K.O.M.K.H.P.K.J.C.D.P.W.B., the initials of the Syarikat Kerjasama Orang-orang Melayu Kerajaan Hilir Perak Kerana Jimat Cermat Dan Pinjam-meminjam Wang Berhad. This is the Malay name for The Cooperative Company of the Lower State of Perak Government's Malay People for Money Savings and Loans Ltd., in Teluk Anson, Perak, West Malaysia (formerly Malaya). The abbreviation for this abbreviation is Skomk. The 55-letter full name of Los Angeles (El Pueblo de Nuestra Señora la Reina de los Angeles de Porciuncula) is abbreviated to LA or 3.63 per cent of its length.

Longest Acronym

The longest acronym is NIIOMTPLABOPARMBETZHELBE-TRABSBOMONIMONKONOTDTEKHSTROMONT with 56 letters (54 in cyrillic) in the *Concise Dictionary of Soviet Terminology* meaning: The laboratory for shuttering, reinforcement, concrete and ferro-concrete operations for composite-monolithic and monolithic constructions of the Department of the Technology of Building—assembly operations the Scientific Research Institute of the Organisation for building mechanisation and technical aid of the Academy of Building and Architecture of the USSR.

Commonest words and letters

In written English the most frequently used words are in order: the, of, and, to, a, in, that, is, I, it, for and as. The most used in conversation is I. The commonest letter is 'e' and the commonest initial letter is 'T'.

Most meanings

The most over-worked word in English is the word *set* which has 58 noun uses, 126 verbal uses and 10 as a participial adjective.

Most succinct word

The most challenging word for any lexicographer to define briefly is the Fuegian (southernmost Argentina and Chile) word 'mamihlapinatapai' meaning 'looking at each other hoping that either will offer to do something which both parties desire but are unwilling to do'.

Most homophones

The most homophonous sounds in English are *air* and *sol* which, according to the researches of Dora Newhouse of Los Angeles, both have 38 homophones. The homonym with most variant spellings is *Air* with Aire, are, Ayer, Ayr, Ayre, Ear, e'er, ere, eyre and heir.

Most accents

Accents were introduced in French in the reign of Louis XIII (1601–43). The word with most accents is *hétérogénéité*, meaning heterogeneity. An atoll in the Pacific Ocean 320 miles 516 km E.S.E. of Tahiti is named Héréhéretué.

Shortest holoalphabetic sentence

The contrived headline describing the escape from shipboard confinement of a wryneck bird from the valley kibbutz (designated by the Hebrew letter qoph) might read 'Cwm Krutza qoph jynx fled brigs' representing the ultimate in 26 letter sentences containing all 26 letters. This was devised by Greg and Peter Maggs of Urbana, Illinois, USA with the aid of 3 computers.

Longest sentence

A sentence of 1300 words appears in 'Absalom Absalom' by William Faulkner and one of 3153 words in *History of the Church of God* composed by Sylvester Hassell of Wilson, North Carolina, USA, c. 1884 with 86 semi-colons and 390 commas. The longest sentence recorded to have got past the editor of a major newspaper is one of 1286 words in the *New York Times* by Herbert Stein in the issue of 13 Feb 1981. The Report of the President of Columbia University 1942–3 contained a sentence of 4284 words. The first 40,000 words of *The Gates of Paradise* by George Andrzeyewski (Panther) appear to lack any punctuation. Some authors such as James Joyce (1882–1941) appear to eschew punctuation altogether.

PLACE-NAMES

Earliest

The earliest recorded British place-name is Belerion, the Penwith peninsula of Cornwall, referred to as such by Pytheas of Massilia in c. 308 BC. The name Salakee on St Mary's, Isles of Scilly is however arguably of a pre Indo-European substrate meaning *tin island*. There are reasons to contend that Leicester (Roman, *Ligora Castrum*) contains an element reflecting its founding by the Western Mediterranean navigators, the Ligurians, as early as c. 1200 BC. The earliest distinctive name for what is now Great Britain was Albion by Himilco c. 500 BC. The oldest name among England's 46 counties is Kent, first mentioned in its Roman form of Cantium (from the Celtic *canto*, meaning a rim, i.e. a coastal district) from the same circumnavigation by Pytheas. The earliest mention of England is the form *Angelcynn*, which appeared in the Anglo-Saxon Chronicle in AD. 880.

Longest World

The official name for Bangkok, the capital city of Thailand, is Krungtep Mahanakhon. The full name is however: Krungthep Mahanakhon Bovorn Ratanakosin Mahintharayutthaya Mahadilokpop Noparatratchathani Burirum Udomratchanivet-mahasathan Amornpiman Avatarnsathit Sakkathattiyavivisnuksarmprasit (167 letters) which in its most scholarly transliteration emerges with 175 letters. The longest place-name now in use in the world is Taumatawhakatangihangakoauauotamatea (turipukakapikimaungahoronuku)pokaiwhenuakitanatahu, the unofficial 85-letter version of the name of a hill (1002 ft 305 m above sea-level) in the Southern Hawke's Bay district of North Island, New Zealand. This Maori name means 'the hill whereon was played the flute of Tamatea, circumnavigator of lands, for his lady love'. The official version has 57 letters (1 to 36 and 65 to 85). Ijouaououene, a mountain in Morocco, has 8 consecutive vowel letters as rendered by the French.

Great Britain

The longest place-name in the United Kingdom is the concocted

58-letter name *Llanfihangel-y-gwyll-gogerych-wyndrobwl-lantysilio-gogoch*, which is translated: 'St Mary's Church by the pool of the white hazel trees, near the rapid whirlpool, by the red cave of the Church of St Tysilio'. This is the name used for the reopened (April 1973) village railway station in Anglesey, Gwynedd, Wales, but the official name consists of only the first 20 letters of what the Welsh would regard as a 51 letter word since 'll' and 'ch' may be regarded as one. The longest Welsh place-names listed in the Ordnance Survey Gazetteer are Lower Llanfihangel-y-Creuddyn (26 letters), a village near Aberystwyth, Dyfed, and Llansantffraid Cwmdeuddwr (24 letters), Powys.

England

The longest single-word (unhyphenated) place-name in England is Blakehopeburnhaugh, a hamlet between Burness and Rochester in Northumberland, of 18 letters. The nearby Cottonshopeburnfoot (19 letters) is locally rendered as one word though not by the Ordnance Survey. The hyphenated Sutton-under-Whitstonecliffe, North Yorkshire has 27 letters on the Ordnance Survey but with the insertion of 'the' and the dropping of the final 'e' 29 letters in the Post Office List. The longest parish name is Saint Mary le More and All Hallows with Saint Leonard and Saint Peter, Wallingford (68 letters) in Oxfordshire formed on 5 Apr 1971.

Scotland

The longest single-word place-name in Scotland is Coignafeuinterich in Inverness-shire. Kirkcudbrightshire (also 18 letters) became merged into Dumfries and Galloway on 16 May 1975. A 12-acre 5 ha loch 9 miles 14 km west of Stornoway on Lewes, Western Isles is named Loch Airidh Mhic Fhionnlaidh Dhuibh (31 letters).

Ireland

The longest place-name in Ireland is Muckanaghederdauhaulia (22 letters), 4 miles 6 km from Costello in Camus Bay, County Galway. The name means 'soft place between two seas'.

Shortest

The shortest place names in the world are the French village of Y (population 143), so named since 1241, the Danish village Å on the island Fyn, the Norwegian village of Å (pronounced 'Aw'), the Swedish place Å in Vikholandet, U in the Caroline Islands, Pacific Ocean; and the Japanese town of Sosei which is alternatively called Aioi or O. There was once a 6 in West Virginia, USA. The shortest place-names in Great Britain are the two-lettered villages of Ae (population 199 in 1961) Dumfries and Galloway; Oa on the island of Islay, Strathclyde and Bu on Wyre, Orkney Islands. In the Shetland Islands there are skerries called Ve and two stacks called Aa. The island of Iona was originally I. The River E flows into the southern end of Loch Mhór, Inverness-shire, and O Brook flows on Dartmoor, Devon. The shortest place-name in Ireland is Ta (or Lady's Island) Lough, a sea-inlet on the coast of County Wexford. Tievalough, in County Donegal, is also called Ea.

Most spellings

The spelling of the Dutch town of Leeuwarden has been recorded in 225 versions since AD 1046. The Leicestershire village of Shepshed is recorded in 49 spellings since the Scepvesde of the Domesday Book in 1086.

PERSONAL NAMES

Earliest

The earliest personal name which has survived is seemingly that of a predynastic king of Upper Egypt *ante* 3050 BC, who is indicated by the hieroglyphic sign for a scorpion. It has been suggested that the name should be read as Sekhen. The earliest known name of any resident of Britain is Divitiacus, King of the Suessiones, the Gaulish ruler of the Kent area c. 75 BC under the name Prydhai. Scotland, unlike England, was never conquered by the Roman occupiers (AD 43–410). Calgacus (b. c. AD 40), who led this last resistance was the earliest native of Scotland whose name has been recorded.

Longest pedigree

The only non-Royal English pedigree that can with certainty show a clear pre-Conquest descent is that of the Arden family.



Centre of the back row of a school group in 1900: The multi-barrelled Leone Sextus Denys Oswolf Fraudatilius Tollemache-Tollemache-de Orellana-Plantagenet-Tollemache-Tollemache. His record six-barrelled surname was reduced for school purposes to 'Tolly'.

His reverend and eccentric father christened him with names beginning with the letters *£sd* followed by *Fraudatilius*, the Latin for 'son of the defrauded one', to reflect his extreme irritation about an expected legacy which failed to materialise. 'Tolly' died on the Western Front in 1917.

Shakespeare's mother was a Mary Arden. It is claimed on behalf of the Clan Mackay that their clan can be traced to Loarn, the Irish invader of south west Pictland, now Strathclyde, c. AD 501.

Longest single name

The longest Christian or given name on record is one of 210 letters, Kapiolani Malamalama O Hawaii Nei Ku'uipo O Keali'i Inu Lama O Kapa'akea He Makua O Kawika Kealoha Pume-hana O Kaila A Mumi A Konia Lapa Vila Nui Ma Malamalama O Kou La Hanau O Oe U'ilana Ku'u Lei Ku'u Milimili E Aloha No Ko Makou Ia Ka Pua Lilia Ke Kuini Lapa Vila, in the case of Lily K. Kahumoka born on 24 June 1981 in Charleston, South Carolina, USA.

Longest surname World

The longest name used by anyone is Adolph Blaine Charles David Earl Frederick Gerald Hubert Irvin John Kenneth Lloyd Martin Nero Oliver Paul Quincy Randolph Sherman Thomas Uncas Victor William Xerxes Yancy Zeus Wolfeschlegelsteinhausenbergerdorff, Senior, who was born at Bergedorf, near Hamburg, Germany, on 29 Feb 1904. On printed forms he uses only his eighth and second Christian names and the first 35 letters of his surname. The full version of the name of 590 letters appeared in the 12th edition of *The Guinness Book of Records*. He now lives in Philadelphia, Pennsylvania, USA, and has shortened his surname to Mr Wolfe+585, Senior.

United Kingdom

The longest surname in the United Kingdom was the six-barrelled one borne by the late Major L.S.D.O.F. (Leone Sextus Denys Oswolf Fraudati filius) Tollemache-Tollemache-de Orellana-Plantagenet-Tollemache-Tollemache, who was born on 12 June 1884 and died of pneumonia in France on 20 Feb 1917. Of non-repetitious surnames, the last example of a five-barrelled one was that of the Lady Caroline Jemima Temple-Nugent-Chandos-Brydges-Grenville (1858–1946). The longest single English surname is Featherstonehaugh, correctly pronounced on occasions (but improbably on the correct occasion) Featherstonehaw or Festonhaw or Fessonhay or Freestonhugh or Feerstonhaw or Fanshaw.

Scotland

In Scotland the surname nin (feminine of mac) Achinmacdholi-cachinskerray (29 letters) was recorded in an 18th century parish register.

Most Christian names

The great-great-grandson of Carlos III of Spain, Don Alfonso de Borbón y Borbón (1866–1934) had 89 Christian names of which several were lengthened by hyphenation.

Shortest

The commonest single-letter surname is O, prevalent in Korea,

but with 52 examples in US phone books (1973-81) and 12 in Belgium. This name causes most distress to those concerned with the prevention of cruelty to computers. Every other letter, except Q, has been traced in US phone books (used as a surname) by A. Ross Eckler. There are two one-lettered Burmese names E (calm), pronounced aye and U (egg), pronounced Oo. U before the name means 'uncle'. There exist among the 47,000,000 names on the Dept. of Health & Social Security index 6 examples of a one-lettered surname. Their identity has not been disclosed, but they are 'A', 'B', 'J', 'N', 'O' and 'X'. Two-letter British surnames include By and On and have recently been joined by Oy, Za and others. The Christian name 'A' has been used for 5 generations in the Lincoln Taber family of Fingringhoe, Essex.

Commonest family name World

The commonest family name in the world is the Chinese name Chang which is borne, according to estimates, by between 9.7 and 12.1 per cent of the Chinese population, so indicating even on the lower estimate that there are at least some 75,000,000 Changs—more than the entire population of all but 7 of the 164 other sovereign countries of the world.

English

The commonest surname in the English-speaking world is Smith. The most recent published count showed 659,050 nationally insured Smiths in Great Britain, of whom 10,102 were plain John Smith and another 19,502 were John (plus one or more given names) Smith. Including uninsured persons there were over 800,000 Smiths in England and Wales alone, of whom 81,493 were called A. Smith. There were an estimated 2,382,509 Smiths in the USA in 1973.

'Mac's'

There are, however, estimated to be 1,600,000 persons in Britain with M', Mc or Mac (Gaelic 'son of') as part of their surnames. The commonest of these is Macdonald which accounts for about 55,000 of the Scottish population.

Commonest Christian name

From the latest available full year (1980) birth registrations for England and Wales at the General Register Office at St Catherine's House, Kingsway, London, the most favoured first forename choice of parents from the classless 1.39% sample of the 9135 entries bearing the (easily) commonest surname of Smith are boys Matthew with a small lead over David and Paul (followed by Stephen and Daniel) and girls Emma well ahead of Claire, Sarah, Kelly and Rebecca. This survey was carried out by C. V. Appleton. From 1196 to at least 1925 William and John were first and second.

Most versions

Mr Edward A. Nedelcov of Regina, Saskatchewan, Canada has collected 779 versions of the spelling of his family name since January 1960. Mzilikazi of Zululand (b. c. 1795) had his name chronicled in 325 spellings, according to researches by Dr R. Kent Rasmussen.

Most contrived name

In the United States the determination to derive commercial or other benefit from being the last listing in the local telephone book has resulted in self-given names, starting with up to 9 z's—the extreme example being Zachary Zzzzzzzzzra in the San Francisco book. Last in the book for North Hollywood, Los Angeles is however Mr B. Zzzzygot. The alpha and omega of Britain's 82 directories are Mrs Maude E. Aab of Hull, Humberside and Mr P. B. Zzytt of Wells, Somerset.

TEXTS AND BOOKS

Oldest

The oldest known written text is the pictographic expression of Sumerian speech (see Earliest Language, p. 92). The Sumerian papyri, written in Aramaic, found 8½ miles 13.7 km north of Jericho are dated 375-335 BC.

Oldest printed

The oldest surviving printed work is a Korean scroll or sutra from wooden printing blocks found in the foundations of the

Pulgak Sa pagoda, Kyungju, Korea, on 14 Oct 1966. It has been dated no later than AD 794. It was claimed in November 1970 that a 28-page book of Tang dynasty poems at Yonsei University, Korea was printed from metal type c. 1160.

Oldest mechanically printed

It is widely accepted that the earliest mechanically printed full length book was the 42-line Gutenberg Bible, printed at Mainz, Germany, in c. 1454 by Johann Henne zum Gensfleisch zur Laden, called 'zu Gutenberg' (c. 1398-c. 1468). Work on water marks published in 1967 indicates a copy of a surviving printed 'Donatus' Latin grammar was made from paper in c. 1450. The earliest exactly dated printed work is the Psalter completed on 14 Aug 1457 by Johann Fust (c. 1400-66) and Peter Schöffer (1425-1502), who had been Gutenberg's chief assistant. The earliest printing by William Caxton (c. 1422-1491) though undated would appear to be *The Recuyel of the Histories of Troye* in late 1473 to spring 1474.

Largest Book

The largest book in the world is the *Super Book* measuring 9 ft x 10 ft 2½ in 2.74 x 3.07 m weighing 557 lb 252.6 kg consisting of 300 pages published in Denver, Colorado, USA in 1976.

Publication

The largest publication in the world is the 1112 volume set of *British Parliamentary Papers* published by the Irish University Press in 1968-72. A complete set weighs 3¼ tons 3.3 tonnes, costs £32,804 and would take 6 years to read at 10 hours per day. The production involved the death of 34,000 Indian goats, and the use of £15,000 worth of gold ingots. The total print is 500 sets.

Dictionary

Deutsches Wörterbuch started by Jacob and Wilhelm Grimm in 1854 was completed in 34,519 pages and 33 volumes in 1971. Today's price is DM4,920.30 (now £1045). The largest English language dictionary is the 12-volume Royal quarto *The Oxford English Dictionary* of 15,487 pages published between 1884 and 1928 with a first supplement of 963 pages in 1933 with a further 4-volume supplement, edited by R. W. Burchfield, O-sez (due late 1981) and Se-Z and the Bibliography (due 1985) have yet to appear. The work contains 414,825 words, 1,827,306 illustrative quotations and reputedly 227,779,589 letters and figures, 63.8 times more than the Bible. The greatest outside contributor has been Marghanita Laski with 175,000 quotations since 1958.

The New Grove Dictionary of Music and Musicians (Editor: Stanley Sadie) published in 20 volumes by Macmillan's in February 1981 contains over 22 million words and 4,500 illustrations and is the largest specialist dictionary yet published.

Smallest book

The smallest marketed bound printed book with cursive material is one of 20 pages measuring 1.4 x 1.4 mm ⅛ x ⅛ in, comprising the children's story 'Ari' (the ant) made by Asao Hoshio in Tokyo, Japan and published in 200 copies in June 1980.

Longest novel

The longest important novel ever published is *Les hommes de bonne volonté* by Louis Henri Jean Farigoule (b. 26 Aug 1885), alias Jules Romains, of France, in 27 volumes in 1932-46. The English version *Men of Good Will* was published in 14 volumes in 1933-46 as a 'novel-cycle'. The 4959 page edition published by Peter Davies Ltd has an estimated 2,070,000 words excluding a 100 page index. The novel *Tokuga-Wa Ieyasu* by Sohachi Yamaoka has been serialised in Japanese daily newspapers since 1951. Now completed it will require nearly 40 volumes in book form.

Encyclopaedias Earliest

The earliest known encyclopaedia was compiled by Speusippus (post 408-c. 338 BC) a nephew of Plato, in Athens c. 370 BC. The earliest encyclopaedia compiled by a Briton was *Liber exerpitionum* by the Scottish monk Richard (d. 1173) at St Victor's Abbey, Paris c. 1140.

Largest

The largest encyclopaedia ever compiled was the *Great Standard*

Encyclopaedia of Yung-lo is a set of 22,957 manuscript chapters (370 still survive), written by 2000 Chinese scholars in 1403-8.

Most comprehensive

The most comprehensive academic encyclopaedia is the *Encyclopaedia Britannica*, first published in Edinburgh, Scotland, in December 1768-1771. A group of booksellers in the United States acquired reprint rights in 1898 and completed ownership in 1899. In 1943 the *Britannica* was given to the University of Chicago, Illinois, USA. The current 30-volume 15th edition contains 33,141 pages and 43,000,000 words from 4277 contributors. It is now edited in Chicago and in London.

Longest index

The Ninth Collective Index of *Chemical Abstracts* completed on 23 Aug 1978 contains 20.55 million entries in 95,882 pages and 57 volumes, and weighs 251 lb 113,8 kg.

Maps Oldest

The oldest known map of any kind is a clay tablet depicting the river Euphrates flowing through northern Mesopotamia, Iraq, dated c. 3800 BC. The earliest surviving product of English map-making is the Anglo Saxon *mappa mundi*, known as the Cottonian manuscript from the late 10th century. The earliest printed map in the world dates from Isidore of Seville's *Etymologiarium* of 1472. The earliest printed map of Britain was Ptolemy's outline printed in Bologna, Italy in 1477.

Most expensive Printed Book

The highest price ever paid for a printed book is \$2,400,000 (then £1,265,000) for one of the only 21 complete known copies of the Gutenberg Bible, printed in Mainz, W. Germany in c. 1454. It was bought from the Carl and Lily Pforzheimer Foundation by Texas University in a sale arranged by Quaritch of London in New York on 9 June 1978.

Broadsheet

The highest price ever paid for a broadsheet has been \$404,000 (then £168,333) for one of the 16 known copies of *The Declaration of Independence*, printed in Philadelphia in 1776 by Samuel T. Freeman & Co, and sold to a Texan in May 1969.

Manuscripts

The highest value ever paid for a complete manuscript is £2.2 million by Armand Hammer paid at Christie's, London on 12 Dec 1980 for Leonardo da Vinci's 36-page Codex Leicester manuscript compiled in c 1507. It was sold by the trustees of the Holkham estate.

Atlas

The highest price paid for an atlas is £340,000 for a 16th century Mercator atlas of Europe, sold at Sotheby's, London, on 13 Mar 1979.

BIBLE

Oldest

Biblical texts in Hebrew are known to have become standardised as early as AD 70. The oldest leather and papyrus Dead Sea Scrolls date from c. 250 BC. The oldest known bible is the *Codex Vaticanus* written in Greek ante AD 350 and preserved in the Vatican Museum, Rome. The earliest complete Bible printed in English was one edited by Miles Coverdale, Bishop of Exeter (c. 1488-1569), while living in Antwerp, and printed in 1535. William Tyndale's New Testament in English had, however, been printed in Cologne and in Worms, Germany in 1525.

Longest and shortest books

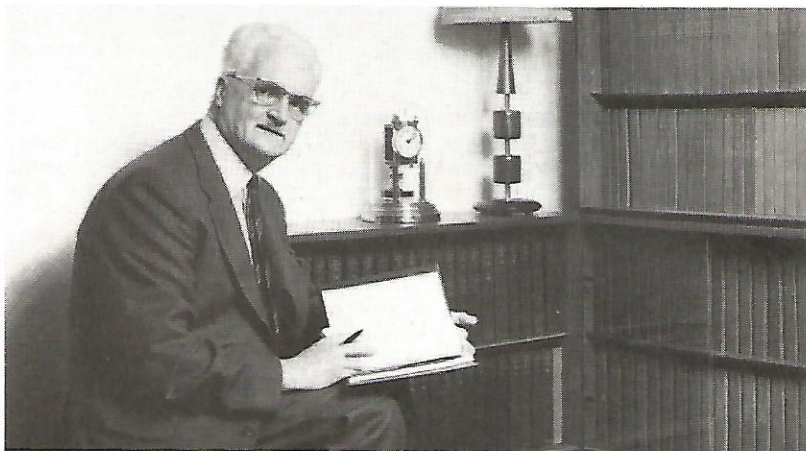
The longest book in the Authorized version of the Bible is the Book of Psalms, while the longest book including prose is the Book of the Prophet Isaiah, with 66 chapters. The shortest is the Third Epistle of John, with 294 words in 14 verses. The Second Epistle of John has only 13 verses but 298 words.

Longest and shortest psalm and verse

Of the 150 Psalms, the longest is the 119th, with 176 verses, and the shortest is the 117th, with two verses. The shortest verse in the Authorised Version (King James) of the Bible is verse 35 of Chapter XI of the Gospel according to St. John, consisting of the two words 'Jesus wept'. The longest is verse 9 of Chapter VIII of



The world's most durable diarist, Mrs P. Joyce Evans of Swansea, South Wales. She started it 76 years ago in 1906 when she was 16. (*Western Mail and Echo Ltd*) T. C. Baskerville, Britain's most voluminous diarist. He has written nearly 4¼ million words since 1939. (*Mack of Manchester Ltd*)



the Book of Esther, which extends to a 90-word description of the Persian empire.

Total letters and words, longest name

The total number of letters in the Bible is 3,566,480. The total number of words depends on the method of counting hyphenated words, but is usually given as between 773,692 and 773,746. The word 'and' according to Colin McKay Wilson of the Salvation Army appears 46,227 times. The longest personal name in the Bible is the 18 letter Maher-shalal-hash-baz, the symbolic name of the second son of Isaiah (Isaiah, Chapter VIII, verses 1 and 3). The caption of Psalm 22, however, contains a Hebrew title sometimes rendered Al-'Ayyeleth Hash-Shahar (20 letters).

DIARIES AND LETTERS

Longest diary

The diary of Edward Robb Ellis (b. 1911) of New York City begun in 1927 is estimated after 55 years to run to 15 million words. The diary of T. C. Baskerville of Chorlton-cum-Hardy, Manchester, maintained since 1939 comprises an estimated 4,220,000 words. Mrs P. Joyce Evans (b. 6 May 1890) of Swansea, Glamorgan, South Wales completed the first 75 years of her diary in 1981.

Letters Longest

The longest personal letter based on a word count is one of 1,113,747 words written in 8 months ending May 1976, by Miss Jacqueline Jones of Lindale, Texas, to her sister, Mrs Jean Stewart, of Springfield, Maine, USA.

To an editor *Longest*

The Upper Darbyin Sentinel of Pennsylvania, USA published a letter of 23,513 words over 8 issues from August to November 1979, written by John Sulzbaugh of Lykens, Pennsylvania.

Most

The only person known to have had over 40 letters published in *The Times* is Mr Hockley Clarke of Surbiton, Surrey in the period 1930-70. Britain's, and seemingly the world's, most indefatigable writer of letters to the editors of newspapers is Raymond L. Cantwell, of Oxford. His total claims are currently under audit.

Shortest

The shortest correspondence on record was that between Victor Marie Hugo (1802-85) and his publisher Hurst and Blackett in 1862. The author was on holiday and anxious to know how his new novel *Les Misérables* was selling. He wrote '?'. The reply was '!'.

In the middle of the 11 month strike of the London *Times*, the Editor received a letter dated 9 July 1979 'Dear Sir, I remain yours faithfully T. P. O'Brien'.

Most personal mail

The highest confirmed mail received by any private citizen in a year is 900,000 letters by the baseball star Hank Aaron reported by the US Postal Department in June 1974. About a third were letters of hate engendered by his bettering of 'Babe' Ruth's career record for 'home runs' set in 1927. (See Chap. 12.)

Pen pals most durable

The longest sustained correspondence on record is one of 74 years between Mrs E. Darlington of Marple, Cheshire and Mrs Gertrude Walker of Hawthorn, South Australia which started on 5 Jan 1906.

Birthday card—most parsimonious

Mrs Amelia Finch (b. 18 Apr 1912) of Lakehurst, New Jersey, USA and Mr Paul E. Warburgh (b. 1 Feb 1902) of Huntington, New York have been exchanging the same card since 1 Feb 1927.

Christmas cards

The greatest number of personal Christmas cards sent out is believed to be 62,824 by Mr Werner Erhard of San Francisco, California in December 1975.

AUTOGRAPHS AND SIGNATURES

Earliest

The earliest surviving signature known is that of the French king Clotaire I (Le Vieux) of Soissons (558-561) born c. 497. A signum exists for William I (the Conqueror) c. 1070. The earliest English sovereign whose handwriting is known to have survived is Edward III (1327-77). The earliest full signature extant is that of Richard II (dated 26 July 1386). The Magna Carta does not

The world's most prolific novelist of all time, Kathleen Lindsay, (1903-73), who had 904 novels published. (*Argus South African Newspapers Ltd*)



bear even the mark of King John (reigned 1199-1216), but carries only his seal affixed on 19 June 1215. The contention that he wrote a letter to the Abbot of Reading on 4 Apr 1208 is misconceived. He was illiterate.

Most expensive

The highest price ever paid on the open market for a single autograph letter signed is \$100,000 (then £45,500), paid on 18 Oct 1979 at a Charles Hamilton auction in New York City for a brief receipt signed by the Gloucestershire-born Button Gwinnett (1732-77), one of the 56 signatories of the United States' Declaration of Independence of 1776.

The highest price paid for a signed autograph letter of a living person is \$12,500 (then £5430) at the Hamilton Galleries on 22 Jan 1981 for a letter from President Ronald Reagan praising Frank Sinatra.

Most valuable

Only one example of the signature of Christopher Marlowe (1564-93) is known. It is in the Kent County Archives on a Will of 1583. It is estimated that a seventh Shakespearean signature would realise at least £1 million at auction.

AUTHORS

Most prolific

The most prolific writer for whom a word count has been published was Charles Hamilton, *alias* Frank Richards (1875-1961), the Englishman who created Billy Bunter. At his height in 1908 he wrote the whole of the boys' comics *Gem* (founded 1907) and *Magnet* (1908-40) and most of two others, totalling 80,000 words a week. His lifetime output has been put at 100,000,000 words. He enjoyed the advantages of the use of electric light rather than candlelight and of being unmarried. The champion of the goose quill era was Józef Ignacy Kraszewski (1812-87) of Poland who produced more than 600 volumes of novels and historical works.

Soho Tokutomi (1863-1957) wrote the history *Kinsei Nippon Kokuminshi* in 100 volumes of 429,425 pages and 19,452,952 letters in 35 years.

Most novels

The greatest number of novels published by any author is 904 by Kathleen Lindsay (Mrs Mary Faulkner) (1903-73) of Somerset West, Cape Province, South Africa. She wrote under six pen names, two of them masculine. The most prolific living novelist is Luran Paine of California, who has had 856 published under 71 pen names. After receiving a probable record 743 rejection slips the British novelist John Creasey MBE (1908-73), under his own name and 13 *noms de plume* had 564 books totalling more than 40,000,000 words published from 1932 to his death on 9 June 1973. The British authoress with the greatest total of full-length titles is Miss Ursula Harvey Bloom (b. Chelmsford, Essex 1892) (Mrs A. C. G. Robinson, formerly Mrs Denham-Cookes), who reached 500 by December 1975, starting in 1924 with *The Great Beginning* and including the best sellers *The Ring Tree* (novel) and *The Rose of Norfolk* (non-fiction). Enid Mary Blyton (1898-1968) (Mrs Darrell Waters) completed 600 titles of children's stories, many of them brief, with 59 in the single year 1955. She was translated into a record 128 languages.

Most text books

Britain's most successful writer of text books is the ex-schoolmaster Ronald Ridout (b. 23 July 1916) who between 1948 and April 1982 had 445 titles published with sales of 77,530,000. His *The First English Workbook* has sold 4,815,000.

The annual aggregate sales of all titles by Louis Alexander of Haslemere, Surrey, reached 4,573,000 in the year 1977.

Highest paid

In 1958 a Mrs Deborah Schneider of Minneapolis, Minnesota, USA, wrote 25 words to complete a sentence in a competition for the best blurb for Plymouth cars. She won from about 1,400,000 entrants the prize of \$500 (then £178) every month for life. On normal life expectations she would have collected \$12,000 (£4,285) per word. No known anthology includes Mrs Schneider's deathless prose.

Greatest Advance

The greatest advance paid for any book is \$3,208,875 (then £1.45 million) by Bantam Books Inc. for *Princess Daisy* by Judith Krantz in an auction in New York City, USA on 5 Sept 1979. Corgi Books paid the highest rights price ever paid in Britain of \$450,000 (then £205,000).

Top selling

It was announced on 13 Mar 1953 that 672,058,000 copies of the works of Generalissimo Stalin (born Yózef Vissarionovich Dzhugashvili) (1879–1953), had been sold or distributed in 101 languages.

The all-time estimate of book sales by Erle Stanley Gardner (1889–1970) (US) to 1 Jan 1982 were 314,833,102 copies in 37 languages. The top selling authoress has been Dame Agatha Christie (née Miller) (later Lady Mallowan) (1890–1976) whose 87 crime novels sold an estimated 300,000,000 in 103 languages. *Sleeping Murder* was published posthumously in 1977. Currently the top-selling authoress is Barbara Cartland (Mrs McCorquodale) with global sales nearing 300,000,000 for 344 titles in 17 languages. In 1977, 1980 and 1981 she published 24 titles in the calendar year.

Highest selling titles

It is believed that 1879 edition of *The McGaffey Reader*, compiled by Henry Vail and published for school distribution in the United States by Van Antwerp Bragg and Co sold 60 million copies in the pre-copyright era.

For details of the *Guinness Book of Records* see p. 100.

Most rejections

The greatest recorded number of publisher's rejections for a manuscript is 137 for *One Man versus the Establishment* by William E. E. Owens of Street, Somerset on a revised form of government.

Oldest authoress

The oldest authoress in the world was Mrs Alice Pollock (née Wykeham-Martin) (1868–1971), of Haslemere, Surrey, whose book *Portrait of My Victorian Youth* (Johnson Publications) was published in March 1971 when she was aged 102 years 8 months.

Youngest

The youngest recorded commercially published author is Dorothy Straight (b. 25 May 1958) of Washington DC, who wrote *How the World Began* in 1962 aged 4 which was published in August 1964 by Pantheon Books, New York.

Longest literary gestation

The standard German dictionary *Deutsches Wörterbuch*, begun by the brothers Grimm in 1854, was finished in 1971. *Acta Sanctorum* begun by Jean Bolland in 1643, arranged according to saints' days, reached the month of November in 1925 and an introduction for December was published in 1940.

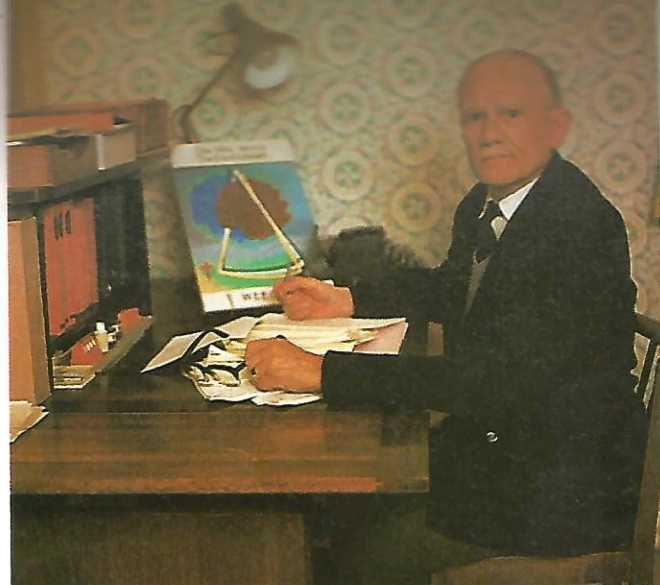
Poet Laureate Youngest and oldest

The youngest Poet Laureate was Laurence Eusden (1688–1730), who received the bays on 24 Dec 1718 at the age of 30 years and 3 months. The greatest age at which a poet has succeeded is 73 in the case of William Wordsworth (1770–1850) on 6 Apr 1843. The longest lived Laureate was John Masefield, OM, who died on 12 May 1967, aged 88 years 345 days. The longest which any poet has worn the laurel is 41 years 322 days, in the case of Alfred (later the 1st Lord) Tennyson (1809–92), who was appointed on 19 Nov 1850 and died in office on 6 Oct 1892.

Longest poem

The lengthiest poem ever published has been the Kirghiz folk epic *Manas*, which appeared in printed form in 1958 but which has never been translated into English. It runs to 'more than 500,000 lines'. Short translated passages appear in *The Elekh Book of Oriental Verse*.

The longest poem ever written in the English language is one on the life of King Alfred by John Fitchett (1766–1838) of Liverpool which ran to 129,807 lines and took 40 years to write. His editor Robert Riscoe added the concluding 2585 lines.



top: The author of the world's most oft-rejected manuscript, William Owens of Street, Somerset. above: Alistair MacLean (GB) the only author to have written 18 million-selling novels (see p. 100). (Godfrey Argent)

Roger Brien's (b. Montreal, 1910) *Prométhée—dialogue des vivants et des morts* runs to 456,047 lines written in 1964–81. Brien has written another 497,000 lines of French poetry in over 90 published works.

Most Successful

The most translated poem is believed to be *If* by Joseph Rudyard Kipling (1865–1936), first published in 1910. It was put into 27 languages and according to Kipling 'anthologized to weariness'.

HIGHEST PRINTINGS

World

The world's most widely distributed book is the Bible, portions of which have been translated into 1735 languages. This compares with 222 languages by Lenin. It has been estimated that between 1815 and 1975 some 2,500,000,000 copies were printed of which 1,500,000,000 were handled by Bible Societies. The total distribution of complete Bibles by the United Bible Societies (covering 150 countries) in the year 1981 was 10,441,456.

It has been reported that 800,000,000 copies of the red-covered booklet *Quotations from the Works of Mao Tse-tung* were sold or

distributed between June 1966, when possession became virtually mandatory in China, and September 1971 when their promoter Marshal Lin Biao died in an air crash.

Non fiction

The total disposal through non-commercial channels by Jehovah's Witnesses of the 192 page hard bound book *The Truth That Leads to Eternal Life* published by the Watchtower Bible and Tract Society of Brooklyn, New York, on 8 May 1968, reached 102,137,804 in 116 languages by 1 Apr 1982.

BEST SELLERS

The world's all-time best selling copyright book is the *Guinness Book of Records* first published from 107 Fleet Street, London EC4 in September 1955 by the Guinness Brewery to settle arguments in Britain's 81,400 pubs and edited by Norris Dewar McWhirter (b. 12 Aug 1925) and his twin brother Alan Ross McWhirter (k. 27 Nov 1975). Its cumulative sale in 21 languages to mid-1982 is estimated at over 45 million copies increasing by some 60,000 per week.

Best Seller Lists

The *Sunday Times* best seller list (which excludes books published annually) was first published on 14 Apr 1974. *The Country Diary of an Edwardian Lady* (publisher Michael Joseph) held No 1 position for 59 consecutive weeks up to the paper's 10 month closure which started on 30 Nov 1978. Its global sales in 13 languages reached 2,220,731 copies by 31 Mar 1982.

Fiction

The novel with the highest sales has been *Valley of the Dolls* (first published March 1966) by Jacqueline Susann (Mrs Irving Mansfield) (1921-74) with a world-wide total of 25,412,000 to 1 May 1982. In the first 6 months Bantam sold 6.8 million. In the United Kingdom the highest print order has been 3,000,000 by Penguin Books Ltd. for their paperback edition of *Lady Chatterley's Lover*, by D. H. (David Herbert) Lawrence (1885-1930). The total sales to April 1982 were 4,439,000. Alistair Stuart MacLean (b. Scotland, April 1922) between 1955 and 1981 wrote 25 books of which the sales of 18 have exceeded a million copies and 13 have been filmed. *The Cruel Sea* by Nicholas Monsarrat (1910-79) published in 1951 by Cassell, reached sales of 1,200,000 in its original edition.

Fastest Publisher

The fastest time in which a book has been published is 46½ hours from receipt of manuscript to finished copies, in the case of *Miracle on Ice* by the staff of *The New York Times* on 27-28-29 Feb 1980. The 96 page story of the US Olympic gold medal ice hockey team was published by Bantam Books Inc.

Slowest seller

The accolade for the world's slowest selling book (known in US publishing as slooow-sellers) probably belongs to David Wilkins's Translation of the New Testament from Coptic into Latin published by Oxford University Press in 1716 in 500 copies. Selling an average of one each 139 days, it remained in print for 191 years.

PUBLISHERS AND PRINTERS

Oldest Publisher

The Oxford University Press's first publication is dated 1468 though probably not issued until c. 1478.

Prolific Publisher

In terms of new titles per annum Britain's most prolific publisher in 1981 was John Wiley and Sons Ltd (founded 1807) with 915. The UK published a record 48,158 book titles in 1980 of which a record 10,776 were reprints. These totals were not reached in 1981.

Largest Printer World

The largest printers in the world are R. R. Donnelley & Sons Co. of Chicago, Illinois, USA. The company, founded in 1864, has plants in 15 main centres, turning out \$957,000,000 (£435 million) worth of work per year. More than 60,000 tons of inks and 1,200,000 tons of paper and board are consumed every year.

The largest printer under one roof is the United States Government Printing Office (founded 1860) in Washington, DC, USA. The Superintendent of Documents sells over \$50 million (£27.7 million) worth of US governmental publications every year and maintains an inventory of nearly 20,000 titles in print.

Print order

The initial print order for the 52nd Automobile Association Members' Handbook (1982-3) was 4,800,000 copies. The total print since 1908 has been 82,000,000. It is currently printed by web offset by Petty & Sons of Leeds.

The aggregate print of The Highway Code (instituted 1931) reached 90,000,000 after 50 years in mid-1981).

LIBRARIES

Largest World

The largest library in the world is the United States Library of Congress (founded on 24 Apr 1800), on Capitol Hill, Washington, DC. By 1981 it contained 78,641,212 items, including 19,578,334 volumes and pamphlets. The buildings contain 64.6 acres 26.14 ha of floor space and contain 532 miles 856 km of shelving. The James Madison Memorial Extension was dedicated in April 1980 and has 34.5 acres 14 ha of floor space.

The largest non-statutory library in the world is the New York Public Library (founded 1895) on Fifth Avenue with a floor space of 525,276 ft² 48 800 m² and 88 miles 141.6 km of shelving. Its collection including 82 branch libraries embraces 10,205,469 volumes, 11,816,587 manuscripts and 346,358 maps.

Great Britain

The largest library in the United Kingdom is the British Library, dispersed among 16 buildings in London and a 60 acre 24.3 ha site at Boston Spa, West Yorkshire, with a total staff of over 2000. The British Library Reference Division contains over 10 million books, and takes in more than 90,000 different journals. Under the Copyright Act a copy of every UK publication must be deposited with the British Library and much is acquired from overseas by purchase or exchange. Stock increases involve over 4.5 miles 7.2 km of added shelving annually. The British Library's Newspaper Library at Colindale, North London, opened in 1932, has 522,700 volumes and parcels and 153,700 reels of microfilm comprising 45,000 different titles on 20 miles 32 km of shelving. The British Library Lending Division in West Yorkshire (shelf capacity 96 miles 154.5 km) runs the largest library inter-lending operation in the world; it handles annually nearly 3 million requests from other libraries (UK and overseas) for items they do not hold in stock. The largest public library in the United Kingdom is the extended Mitchell Library, North Street, Glasgow with a floor area of 510,000 ft² 47 380 m² or 11.7 acres 4.7 ha and an ultimate capacity for 4,000,000 volumes. The earliest public library in Scotland is in Kirkwall, Orkney, founded in 1683.

Overdue books

The most overdue book taken out by a known borrower was one reported on 7 Dec 1968, checked out in 1823 from the University of Cincinnati Medical Library on Febrile Diseases (London, 1805 by Dr J. Currie). This was returned by the borrower's great-grandson Richard Dodd. The fine calculated to be \$2264 (then £1102 10s) was waived.

PERIODICALS

Oldest World

The oldest continuing periodical in the world is *Philosophical Transactions of the Royal Society*, published in London, which first appeared on 6 Mar 1665.

Great Britain

The bi-monthly *The Gospel Magazine* has been published since 1766. Curtis's *Botanical Magazine* has been in continuous publication since 1 Feb 1787, as several 'parts' a year forming a series of continuously numbered volumes. Britain's oldest weekly periodical is *Lancet* first published in 1823. The *Scots Magazine* began publication in 1739 and ran till 1826, and with three breaks has been produced continuously since 1924.

Largest circulation World

The largest circulation of any weekly periodical is that of *TV Guide* (USA) which in 1974 became the first magazine in history to sell a billion (1000 million) copies in a year. The weekly average for July–December 1981 was 17,670,543. In its 41 basic international editions *The Reader's Digest* (established February 1922) circulates 31,145,000 copies monthly in 17 languages, including a United States edition of more than 17,750,000 copies and a United Kingdom edition (established 1939) of 1,629,486 copies (av. January–December 1981).

Parade, the syndicated Sunday newspaper colour magazine, is distributed with 137 newspapers every Sunday. The current circulation is 21,920,842 (March 1982).

Great Britain

The highest circulation of any periodical in Great Britain is that of the *Radio Times* (instituted on 28 Sept 1923). The average weekly sale for July–December 1981 was 3,393,720 copies with a readership of 9,766,000. The highest sale of any issue was 9,778,062 copies for the Christmas issue of 1955. *TV Times* averaged sales of 3,263,539 in the period July–Dec 1981 with an estimated readership of 9,700,000 (July–December 1981).

Annual

Old Moore's Almanack has been published annually since 1697, when it first appeared as a broadsheet, by Dr Francis Moore (1657–1715) of Southwark, London to advertise his 'physiks'. The annual sale certified by its publishers W. Foulsham & Co. Ltd of Slough England is 1 million copies and its aggregate sale is estimated to be in excess of 108 million.

NEWSPAPERS**Oldest World**

The oldest existing newspaper in the world is the Swedish official journal *Post och Inrikes Tidningar*, founded in 1645. It is published by the Royal Swedish Academy of Letters. The oldest existing commercial newspaper is the *Haarlems Dagblad/Oprechte Haarlemsche Courant*, published in Haarlem, in the Netherlands. The *Courant* was first issued as the *Weeckelycke Courante van Europa* on 8 Jan 1656 and a copy of issue No. 1 survives.

United Kingdom

The oldest continuously produced newspaper in the United Kingdom is *Berrow's Worcester Journal* (originally the *Worcester Post Man*), published in Worcester. It was traditionally founded in 1690 and has appeared weekly since June 1709. *The Belfast News Letter* has been published since 16 Feb 1737/38 and the *Public Ledger* daily since 12 Jan 1760. The oldest newspaper in the United Kingdom is *Lloyd's List*, the shipping intelligence bulletin of Lloyd's London, established as a weekly c. 1729 and as a bi-weekly on 2 Jan 1740/1. The *London Gazette* (originally the *Oxford Gazette*) was first published on 16 Nov 1665. The oldest Sunday newspaper in the United Kingdom is *The Observer*, first issued on 4 Dec 1791.

Largest and smallest

The most massive single issue of a newspaper was the 7½lb 3,40 kg *New York Times* of Sunday 17 Oct 1965. It comprised 15 sections with a total of 946 pages, including about 1,200,000 lines of advertising. The largest page size ever used has been 51 in × 35 in 130 cm × 89 cm for *The Constellation*, printed in 1859 by George Roberts as part of the Fourth of July celebrations in New York City, NY, USA. The *Worcestershire Chronicle* was the largest British newspaper. A surviving issue of 16 Feb 1859 measures 32¼ in × 22½ in 82 cm × 57 cm. The smallest original page size has been 3 × 3¾ in 7,6 × 9,5 cm of the *Daily Banner* (25 cents per month) of Roseburg, Oregon, USA, issues of which, dated 1 and 2 Feb 1876, survive. The *Answers to Correspondents* published by Messrs Carr & Co, Paternoster Square, London in 1888 was 3½ × 4½ in 9 × 11 cm.

Most expensive

Britain's most expensive paper is *The Sunday Times* at 40p or 8s in the money prior to 15 Feb 1971, or 60 per cent higher than the price of the original 1955 fully bound edition of this publication.

Most

The United States had 1745 English-language daily newspapers

at 1 Oct 1980 with a combined net paid circulation of 62,201,840 copies per day. The peak year for US newspapers was 1910, when there were 2202. The leading newspaper readers in the world are the people of Sweden, where 554 newspapers were sold for each 1000 compared with the UK figure of 410.

Longest editorship

The longest editorship of any national newspaper has been more than 59 years by C. P. Scott (1846–1932) of the (then *Manchester*) *Guardian*, who was appointed aged 25 in 1872 and died on 1 Jan 1932. M. S. Krishna Rao (b. c. 1894) was appointed editor of *Satgavadi* of Mysore, India in 1917. The longest time in the chair of a principal national paper is 63 years in the case of Sir Etienne Dupuch OBE of Nassau, Bahamas, editor of the *Tribune* since 1 Apr 1919. Dr Thomas Riddle DD (b. 18 Apr 1886) was still editor-in-chief of *The Christian Herald* in March 1982 aged 96 years.

Most durable feature

The longest lasting feature in the British national press from one pen is *Your Stars* by Edward Lyndoe. It has run since 1 Oct 1933 in *The Sunday People*. Frank Lowe has contributed a weekly natural history column to the *Bolton Evening News* every week since 4 Feb 1926.

Most syndicated cartoonist

Ranan R. Lurie (b. 26 May 1932) is the most widely syndicated political cartoonist in the world. His work is published in 45 countries.

Longest lived strip

The most durable newspaper comic strip has been the Katzenjammer Kids (Hans and Fritz) created by Rudolph Dirks and first published in the *New York Journal* on 12 Dec 1897 and perpetuated by his son John. The earliest strip was *The Yellow Kid*, which first appeared in the *New York Journal* on 18 Oct 1896. The most widely syndicated is *Blondie* (originated in 1930) appearing in 1800 newspapers in 55 countries, in 15 languages with a readership of an estimated 150 million daily.

Most misprints

The record for misprints in *The Times* was set on 22 Aug 1978 when on page 19 there were 97 in 5½ single column inches. The passage concerned 'Pop' (Pope) Paul VI.

Most durable advertiser

The Jos Neel Co, a clothing store in Macon, Georgia, USA (founded 1880) has run an 'ad' in the *Macon Telegraph* every day in the upper left corner of page 2 since 22 Feb 1889 or 33,362 times to May 1982.



Editor-in-Chief of
The Christian Herald,
Dr Thomas Riddle
who was still working
aged 96 years.

CIRCULATION

Earliest 1,000,000

The first newspaper to achieve a circulation of 1,000,000 was *Le Petit Journal*, published in Paris, France, which reached this figure in 1886, when selling at 5 centimes. The *Daily Mail* first reached a million in May 1900.

Highest World

The highest circulation for any newspaper in the world is that for the *Yomiuri Shimbun* (founded 1874) of Japan which attained a figure of 13,872,893 copies on 1 April 1982. This is achieved by totalling the figures for editions published in various centres with a morning figure of 8,914,473 and an evening figure of 4,958,420.

Great Britain

The highest circulation of any single newspaper in Britain is that of the Sunday newspaper *The News of the World*, printed in Bowdrie Street, London. Single issues have attained a sale of 9,000,000 copies with an estimated readership of more than 19,000,000. The paper first appeared on 1 Oct 1843, and surpassed the million mark in 1905. The latest sales figure is 4,435,012 copies per issue (average for 1 Oct 1981 to 31 Mar 1982), with an estimated readership of 11,520,000.

The highest net sale of any daily newspaper in the United Kingdom is that of *The Sun*, founded in London in 1964. The latest sales figure is 4,082,937 (1 Oct 1981–31 Mar 1982), with an estimated readership of 11,993,000.

Most read

The newspaper which achieves the closest to a saturation circulation is *The Sunday Post*, established in Glasgow in 1914. In 1981 its estimated readership in Scotland of 2,790,000 represented 69 per cent of the entire population aged 15 and over.

CROSSWORDS

First

The earliest crossword was one with 32 clues invented by Arthur Wynne (b. Liverpool, England, d. 1945) and published in the *New York World* on 21 Dec 1913. The first crossword published in a British newspaper was one furnished by C. W. Shepherd in the *Sunday Express* of 2 Nov 1924. However a 25 letter acrostic of Roman provenance was discovered on a wall in Cirencester, England in 1868.

Largest

The world's largest published crossword has been one compiled by Stephen Robinson of Coventry, England published by Onsworld Ltd of Stamford, Lincolnshire on 22 Oct. 1979. It contained 6257 clues across and 6051 down and covered 18.5 ft² 1.72 m².

Fastest and slowest solution

The fastest recorded time for completing *The Times* crossword under test conditions is 3 min 45.0 sec by Roy Dean, 43 of Bromley, Greater London in the BBC 'Today' radio studio on 19 Dec 1970. Dr John Sykes won the *Times* championship 4 times (1972–5). In May 1966 *The Times* of London received an announcement from a Fijian woman that she had just succeeded in completing their crossword No. 673 in the issue of 4 Apr 1932.

Most durable compilers

Adrian Bell (1901–1980) of Barsham, Suffolk contributed a record 4520 crosswords to *The Times* from 2 Jan 1930 until his death. R. J. Baddock of Plymouth (b. 30 Oct 1894) has been a regular contributor to national newspapers since 13 Aug 1926. The most prolific compiler is Roger F. Squires, who compiles 37 published puzzles single-handedly each week. His total output in August 1982 was estimated at over 20,000.

ADVERTISING RATES

The highest ever price for a single page has been \$199,040 (£110,580) for a four-colour back cover in *Parade* (circulation 21.9 million per week) in March 1982 (see also p. 101). The record for a four colour inside page is \$194,062 (£107,810) in *Parade* (in March 1982). The advertising revenue from the October 1978 US edition of *Readers Digest* was a peak \$10,393,200 (then £5,196,000).

The highest expenditure ever incurred on a single advertisement in a periodical is \$3,200,000 (£1,600,000) by Gulf and Western Industries on 5 Feb 1979 for insertions in *Time Magazine* (US and selected overseas editions). The British record is some £100,000 for a 20-page colour supplement by Woolworths in *The Radio Times* of 16 Nov 1972. The colour rate for a single page in *The Radio Times* reached £17,700 on 1 Jan 1982 and £21,350 for an outside back page in Oct/Dec 1981. The world's highest newspaper advertising rate is 23,190,000 Yen (£53,930) for a full page in the morning edition and 16,800,000 Yen (£39,070) for the evening edition of the *Yomiuri Shimbun* of Tokyo (April 1982). The highest rate in Britain is a full page in *The News of the World* at £35,286 (May 1982).

4. MUSIC

The Guinness Book of Music (2nd edition), by Robert and Celia Dearling with Brian Rust was published in Spring 1981 and contains more detailed treatment of musical facts and superlatives.

Origins

The world's earliest surviving musical notation dates from c. 1800 BC. A heptonic scale deciphered from a clay tablet by Dr Duchesne-Guillemin in 1966–7 was found at a site in Nippur, Sumer, now Iraq. An Assyrian love song also c. 1800 BC to an Ugaritic god from a tablet of notation and lyric was reconstructed for an 11 string lyre at the University of California, Berkeley on 6 Mar 1974. Musical history is, however, able to be traced back to the 3rd millennium BC, when the yellow bell (*huang chung*) had a recognised standard musical tone in Chinese temple music. Whistles and flutes made from perforated phalange bones have been found at Upper Palaeolithic sites of the Aurignacian period (c. 25,000–22,000 BC) e.g. at Istállóskő, Hungary and in Molodova, USSR.

INSTRUMENTS

Piano Earliest

The earliest pianoforte in existence is one built in Florence, Italy, in 1720 by Bartolommeo Cristofori (1655–1731) of Padua, and now preserved in the Metropolitan Museum of Art, New York City.

Piano Grandest

The grandest grand piano built was one of 1¼ tons/tonnes 11 ft 8 in 3.55 m in length made by Chas. H. Challen & Son Ltd of London in 1935. The longest bass string measured 9 ft 11 in 3.02 m and the tensile stress on the 6½ cwt 330 kg frame was 30 tons/tonnes.

Piano Most Expensive

The highest price ever paid for a piano is \$390,000 (then £177,273) at Sotheby Parke Bernet, New York City on 26 Mar 1980 for a Steinway grand of c. 1888 sold by the Martin Beck Theatre and bought by a non-pianist.

Organ largest World

The largest and loudest musical instrument ever constructed is the now only partially functional Auditorium Organ in Atlantic City, New Jersey, USA. Completed in 1930, this heroic instrument has two consoles (one with seven manuals and another movable one with five), 1477 stop controls and 33,112 pipes ranging in tone from ⅓ of an inch 4.7 mm to the 64 ft 19 m tone. It is powered with blower motors of 365 horsepower 370 cv, cost \$500,000 (then £102,880) and has the volume of 25 brass bands, with a range of seven octaves. The world's largest church organ is that in Passau Cathedral, Germany. It was completed in 1928 by D. F. Steinmeyer & Co. It was built with 16,000 pipes and five manuals. The world's most versatile electric organ is the 8 manual Kawai T.50 built in Japan in 1977 to mark the company's golden jubilee. The chapel organ at West Point US Military Academy, NY has, since 1911, been expanded from 2406 to 18,200 pipes.

Great Britain

The largest organ in Great Britain is that completed in Liverpool Anglican Cathedral on 18 Oct 1926, with two five-manual consoles of which only one is now in use, and 9704 speaking pipes (originally 10,936) ranging from tones of ¾ in to 32 ft 1.9 cm to 9.75 m.

Organists Most Durable

The longest recorded reign as an organist has been 81 years in the case of Charles Bridgeman (1779–1873) of All Saints Parish Church, Hertford, England, who was appointed in 1792 and who was still playing in 1873. The year in which he reached his crescendo was not recorded.

Loudest organ stop

The loudest organ stop in the world is the Ophicleide stop of the Grand Great in the Solo Organ in the Atlantic City Auditorium (see above). It is operated by a pressure of 100 in 254 cm of water ($3\frac{1}{2}$ lb/in² 24 kPa) and has a pure trumpet note of ear-splitting volume, more than six times the volume of the loudest locomotive whistles.

Brass instrument Largest

The largest recorded brass instrument is a tuba standing 7½ ft 2,28 m tall, with 39 ft 11,8 m of tubing and a bell 3 ft 4 in 1 m across. This contrabass tuba was constructed for a world tour by the band of John Philip Sousa (1854–1932), the United States composer, in c. 1896–8, and is still in use. This instrument is now owned by a circus promoter in South Africa.

Horns Longest Alphorn

The longest alphorn is one of 17,98 m 59 ft built from a spruce log by Herr Stocker in Switzerland in 1976. It was demonstrated by Herr Lamy for David Frost on 28 June 1981.

Longest blow

The longest recorded continuous blast on a hunting horn is 61.6 sec by Martin Dee of Blockley, Gloucestershire on a 9 in 22,8 cm Cotswold horn in the BBC TV *Record Breakers* show transmitted on 2 Dec 1981.

Stringed instrument Largest

The largest movable stringed instrument ever constructed was a pantaleon with 270 strings stretched over 50 ft² 4,6 m² used by George Noel in 1767. The greatest number of musicians required to operate a single instrument was the six required to play the gigantic orchestrion, known as the Apollonican, built in 1816 and played until 1840.

Guitar Largest and Most Expensive

The largest and presumably also the loudest playable guitar in the world is one 10 ft 1 in 3,07 m tall, and in excess of 300 lb 136 kg in weight, built by Sparkling Ragtime Productions of San Francisco, and the Guild of American Luthiers, Tacoma, Washington, USA in December 1980. The most expensive standard sized guitar is the German chitarra battente by Jacob Stadler, dated 1624, which was sold for £10,500 at Christies, London on 12 June 1974.

Double bass Largest and Most players

The largest double bass ever constructed was one 14 ft 4,26 m tall, built in 1924 in Ironia, New Jersey, USA by Arthur K. Ferris, allegedly on orders from the Archangel Gabriel. It weighed 11.6 cwt. 590 kg with a sound box 8 ft 2,43 m across, and had leathern strings totalling 104 ft 31,7 m. Its low notes could be felt rather than heard. On 25 Oct 1981 5 members of 'Bass Ten' from Bournemouth, Dorset bowed and 5-fingered a double bass simultaneously in a rendition of Monti's *Czardas*.

'Cello Most valuable

The highest ever auction price for a violoncello is £145,000 at Sotheby's, London on 8 Nov 1978 for a Stradivari made in Cremona, Italy in 1710.

Violin Most valuable

The highest ever price paid at auction for a violin is \$290,000 (then £145,000) for the 'Huberman' ex Kreisler Stradivari dated 1733 at Sotheby's, London on 3 May 1979. Some 700 of the 1116 violins by Stradivarius (1644–1737) have survived. His inlaid 'Hellier' violin was sold by private treaty in the US in March 1979 for a reputed \$400,000 (then £200,000).

Violinist Underwater

The pioneer violinist to surmount the problems of playing the violin underwater was Mark Gottlieb. Submerged in Evergreen State College swimming bath in Olympia, Washington, USA in



The 10 ft 1 in 3,07 m tall guitar weighing 300 lb 137 kg built in San Francisco in December 1980. (Edmund Shea)

March 1975 he gave a submarine rendition of Handel's *Water Music*. His most intractable problem was his underwater *détaché*. On 7 Oct 1979 the first underwater quartet performed in the *Challenge the Guinness* TV show on Channel 7 in Tokyo, Japan.

Most durable fiddlers

Rolland S. Tapley retired as a violinist from the Boston Symphony Orchestra after playing for a reputedly unrivalled 58 years from February 1920 to 27 Aug 1978. Otto E. Funk, 62, walked 4165 miles 6702 km from New York City to San Francisco, California playing his Hopf violin every step of the way westward. He arrived on 16 June 1929 after 183 days on the road.

Drum Largest

The largest drum ever constructed was one 12 ft 3,65 m in diameter weighing 600 lb 272 kg for the Boston World Peace Jubilee of 1872.

Highest and lowest notes

The extremes of orchestral instruments (excluding the organ) range between a handbell tuned to g^v (6272 cycles/sec) and the sub-contrabass clarinet, which can reach C₁₁ or 16.4 cycles/sec. The highest note on a standard pianoforte is c^v (4186 cycles/sec), which is also the violinist's limit. In 1873 a sub double bassoon able to reach B₁₁ # or 14.6 cycles/sec was constructed but no surviving specimen is known. The extremes for the organ are g^{vi} (the sixth G above middle C) (12,544 cycles/sec) and C₁₁ (8.12 cycles/sec) obtainable from ¾ in 1,9 cm and 64 ft 19 m pipes respectively.

Easiest and most difficult instruments

The American Music Conference announced in September 1977 that the easiest instrument is the ukulele, and the most difficult are the French horn and the oboe, which latter has been described as 'the ill woodwind that no-one blows good'.

ORCHESTRAS

Largest Orchestra

The most massive orchestra ever assembled was one of 20,100 at the Ullevaal Stadium, Oslo, of Norges Musikkorps Forbund bands from all Norway on 28 June 1964. On 17 June 1872, Johann Strauss the younger (1825–99) conducted an orchestra of 987 pieces supported by a choir of 20,000, at the World Peace Jubilee in Boston, Massachusetts, USA. The number of first violinists was 400.

Marching band

The largest marching band on record was one of 1976 musicians and 54 drill majors, flag bearers and directors who marched 2

miles 3.2 km down Pennsylvania Avenue in President Nixon's Inaugural Parade on 20 Jan 1973. The longest recorded musical march is one of 61 km 37.9 miles from Lillehammer to Hamar, Norway in 15 hours when, on 10 May 1980, 26 of 35 members of the Trondheim Brass Band survived the playing of 135 marches.

Most successful bands

Most British Open Brass band Championship titles (inst. 1853) have been won by the Black Dyke Mills Band which has won 22 times from 1862 to 1974 including three consecutive wins in 1972-4. The most successful pipe band is the Shotts & Dykehead Caledonian Pipe Band with their 10th world title in August 1980.

Greatest attendance Classical

The greatest attendance at any classical concert has been 400,000 for the Boston Pops Orchestra, conducted by Arthur Fiedler (1895-1979) at the Hatch Memorial Shell, Boston, Massachusetts, USA on 4 July 1976. At the 1978 concert the 83-year-old conductor was presented with a testimonial bearing a record 500,000 signatures.

Pop Festival

The greatest claimed attendance at a Pop Festival has been 600,000 for the 'Summer Jam' at Watkins Glen, New York, USA, on Sunday 29 July 1973 of whom about 150,000 actually paid. There were 12 'sound towers'. The attendance at the third Pop Festival at East Afton Farm, Freshwater, Isle of Wight, England on 30 Aug 1970 was claimed by its promoters, Fiery Creations, to be 400,000.

Single Performer

The largest live paying audience ever attracted by a solo performer is an estimated 175,000 in the Maracaná Stadium, Rio de Janeiro, Brazil to hear Frank Sinatra (b. 1915) on 26 Jan 1980. Elton John entertained an estimated 400,000 in Central Park, New York City, USA at a free concert in the summer of 1980.

COMPOSERS

Most prolific

The most prolific composer of all time was probably Georg Philipp Telemann (1681-1767) of Germany. He composed 12 complete sets of services (one cantata every Sunday) for a year, 78 services for special occasions, 40 operas, 600 to 700 orchestral suites, 44 Passions, plus concertos and chamber music. The most prolific symphonist was Johann Melchior Molter (c. 1695-1765) of Germany who wrote 165. Joseph Haydn (1732-1809) of Austria wrote 104 numbered symphonies some of which are regularly played today.

Most rapid

Among composers of the classical period the most prolific was Wolfgang Amadeus Mozart (1756-91) of Austria, who wrote c. 1000 operas, operettas, symphonies, violin sonatas, divertimenti, serenades, motets, concertos for piano and many other instruments, string quartets, other chamber music, masses and litanies, of which only 70 were published before he died aged 35. His opera *The Clemency of Titus* (1791) was written in 18 days and three symphonic masterpieces, *Symphony No. 39 in E flat major*, *Symphony in G minor* and the *Jupiter Symphony in C*, were reputedly written in the space of 42 days in 1788. His overture *Don Giovanni* was written in full score at one sitting in Prague in 1787 and finished on the day of its opening performance.

Longest symphony

The longest of all single classical symphonies is the orchestral symphony No. 3 in D minor by Gustav Mahler (1860-1911) of Austria. This work, composed in 1896, requires a contralto, a women's and boys' choir in addition to a full orchestra. A full performance requires 1 hr 40 min, of which the first movement alone takes between 30 and 36 min. The Symphony No. 2 (the Gothic, or No. 1), composed in 1919-22 by Havergal Brian (1876-1972) was played by over 800 performers (4 brass bands) in the Victoria Hall, Hanley, Staffordshire on 21 May 1978 (conductor Trevor Stokes). A recent broadcast required 1 hr 45 min. Brian wrote an even vaster work based on Shelley's 'Prometheus Unbound' lasting 4 hr 11 min but the full score has been missing since 1961. The symphony *Victory at Sea* written by Richard Rodgers and arranged by Robert Russell Bennett for NBC TV in 1952 lasted for 13 hr.

Longest piano composition

The longest continuous non-repetitious piece for piano ever specifically composed for the piano has been 'The Well-Tuned Piano' by La Monte Young first presented by the Dia Art Foundation at the Concert Hall, Harrison St. New York City on 28 Feb 1980. The piece lasted 4 hr 12 min 10 secs.

Longest silence

The most protracted silence in a modern sheet music is one entitled *4 minutes 33 seconds* in a totally silent *opus* by John Cage (USA). Commenting on this trend among young composers, Igor Fyodorovich Stravinsky (1882-1971) said that he looked forward to their subsequent compositions being 'works of major length'.

HIGHEST PAID MUSICIANS

Pianist

Wladziu Valentino Liberace (b. West Allis, Wisconsin, USA, 16 May 1917) has earned more than \$2 million each 26 week season with a peak of \$138,000 (then £49,285) for a single night's performance at Madison Square Gardens, New York City, USA in 1954.

The highest paid classical concert pianist was Ignace Jan Paderewski (1860-1941), Prime Minister of Poland (1919-20), who accumulated a fortune estimated at \$5,000,000, of which \$500,000 (then £110,000) was earned in a single season in 1922-23. The *nouveau riche* wife of a US industrialist once required him to play in her house behind a curtain.

Greatest Span

Sergei Vassilievitch Rachmaninov (1873-1943) had a span of 12 white notes and could play a left hand chord of C, E^b, G, C, G.

Singer Most Successful

Of great fortunes earned by singers, the highest on record are those of Enrico Caruso (1873-1921), the Italian tenor, whose estate was about \$9,000,000 (then £1,875,000) and the Italian-Spanish coloratura soprano Amelita Galli-Curci (1889-1963), who received about \$3,000,000 (£750,000). In 1850, up to \$653 was paid for a single seat at the concerts given in the United States by Johanna ('Jenny') Maria Lind, later Mrs Otto Goldschmidt (1820-87), the 'Swedish Nightingale'. She had a range from g to e^{III} of which the middle register is still regarded as unrivalled. The tenor Count John Francis McCormack (1884-1945) of Ireland gave up to 10 concerts to capacity audiences in a single season in New York City.

Worst

While no agreement exists as to the identity of history's greatest singer, there is unanimity on the worst. The excursions of the soprano Florence Foster Jenkins (1868-1944) into lieder and even high coloratura culminated on 25 Oct 1944 in her sell-out concert at the Carnegie Hall, New York, USA. The diva's (already high) high F was said to have been made higher in 1943 by a crash in a taxi. It is one of the tragedies of musicology that Madame Jenkins' *Clavelitos*, accompanied by Cosme McMoon, was never recorded for posterity. Her latter day rival is Mrs Hazel Saunders of Clent, Hereford & Worcester.

OPERA

Longest

The longest of commonly performed operas is *Die Meistersinger von Nürnberg* by Wilhelm Richard Wagner (1813-83) of Germany. A normal uncut performance of this opera as performed by the Sadler's Wells company between 24 Aug and 19 Sept 1968 entailed 5 hr 15 min of music. *The Heretics* by Gabriel von Wayditch, a Hungarian-American, is orchestrated for 110 pieces and lasts 8½ hr.

Shortest

The shortest opera published was *The Deliverance of Theseus* by Darius Milhaud (b. September 1892) first performed in 1928 which lasts for 7 min 27 sec.

Aria

The longest single aria, in the sense of an operatic solo, is Brünnhilde's immolation scene in Wagner's *Götterdämmerung*. A well-known recording of this has been precisely timed at 14 min 46 sec.

Music**Opera houses Largest**

The largest opera house in the world is the Metropolitan Opera House, Lincoln Center, New York City, NY, USA, completed in September 1966 at a cost of \$45,700,000 (then £16,320,000). It has a capacity of 3800 seats in an auditorium 451 ft 137 m deep. The stage is 234 ft 71 m wide and 146 ft 44.5 m deep. The tallest opera house is one housed in a 42-storey building on Wacker Drive in Chicago, Illinois, USA.

Most tiers

The Teatro della Scala (La Scala) in Milan, Italy, shares with the Bolshoi Theatre in Moscow, USSR, the distinction of having the greatest number of tiers. Each has six, with the topmost being nicknamed the *Galiorka* by Russians.

Opera singers Youngest and Oldest

The youngest opera singer in the world has been Jeanette Gloria La Bianca, born in Buffalo, New York on 12 May 1934, who sang Rosina in *The Barber of Seville* at the Teatro dell'Opera, Rome, on 8 May 1950 aged 15 years 361 days, having appeared as Gilda in *Rigoletto* at Velletri 45 days earlier. Ginetta La Bianca was taught by Lucia Carlino and managed by Angelo Carlino. The tenor Giovanni Martinelli sang Emperor Altoum in *Turandot* in Seattle, Washington, USA on 4 Feb 1967 when aged 81.

Longest encore

The longest operatic encore, listed in the *Concise Oxford Dictionary of Opera*, was of the entire opera Cimarosa's *Il Matrimonio Segreto* at its première in 1792. This was at the command of the Austro-Hungarian Emperor Leopold II (1790–92).

SONG**Oldest**

The oldest known song is the *shaduf* chant, which has been sung since time immemorial by irrigation workers on the man-powered pivoted-rod bucket raisers of the Nile water mills (or *saqiya*s) in Egypt. The oldest known harmonized music performed today is the English song *Sumer is icumen in* which dates from c. 1240.

National anthems

The oldest national anthem is the *Kimigayo* of Japan, in which the words date from the 9th century. The anthem of Greece constitutes the first four verses of the Solomos poem, which has 158 stanzas. The shortest anthems are those of Japan, Jordan and San Marino, each with only four lines. Of the 23 wordless national anthems the oldest is that of Spain dating from 1770.

Longest rendering

'God Save the King' was played non-stop 16 or 17 times by a German military band on the platform of Rathenau Railway Station, Brandenburg, on the morning of 9 Feb 1909. The reason was that King Edward VII was struggling inside the train with the uniform of a German Field-Marshal before he could emerge.

Top songs of all time

The most frequently sung songs in English are *Happy Birthday to You* (based on the original *Good morning to all*), by Mildred and Patty S. Hill of New York (published in 1935 and in copyright until 2010); *For He's a Jolly Good Fellow* (originally the French *Malbrouk*), known at least as early as 1781, and *Auld Lang Syne* (originally the Strathspey *I fee'd a Lad at Michaelmass*), some words of which were written by Robert Burns (1759–96). *Happy Birthday* was sung in space by the Apollo IX astronauts on 8 Mar 1969.

Top selling sheet music

Sales of three non-copyright pieces are known to have exceeded 20,000,000 namely *The Old Folks at Home* by Stephen Foster (1855), *Listen to the Mocking Bird* (1855) and *The Blue Danube* (1867). Of copyright material the two topsellers are *Let Me Call You Sweetheart* (1910, by Whitson and Friedman) and *Till We Meet Again* (1918, by Egan and Whiting) each with some 6,000,000 by 1967. Other huge sellers have been *St Louis Blues*, *Stardust* and *Tea for Two*.

Most successful songwriter

In terms of sales of single records, the most successful of all song writers has been Paul McCartney (see also Gramophone, pp.

106–7) formerly of the Beatles and now of Wings. Between 1962 and 1 Jan 1978 he wrote jointly or solo 43 songs which sold a million or more.

Eurovision Contest

In the 26 contests since 1956 France has won 4 outright (1958–60–62–77) and shared 1 (1969). Luxembourg also won outright 4 times (1961–65–72–73). The UK won in 1967 (Sandie Shaw, *Puppet On A String*), 1976 (Brotherhood of Man, *Save Your Kisses For Me*), shared in 1969 (Lulu, *Boom, Bang-a-Bang*) and won in 1981 (Bucks Fizz, *Making Your Mind Up*). Norway twice scored zero with Jahn Teigan and *Mil etter mil* (1980) and Finn Kalvik and *Aldri i livet* (1981). Finland scored zero in 1982.

HYMNS**Earliest**

There are more than 950,000 Christian hymns in existence. The music and parts of the text of a hymn in the *Oxyrhynchus Papyri* from the 2nd century are the earliest known hymnody. The earliest exactly datable hymn is the *Heyr Rimna Smiour* (*Hear, the maker of heaven*) from 1208 by the Icelandic bard and chieftain Kolbeinn Tumason (1173–1208).

Longest and shortest

The longest hymn is *Hora novissima tempora pessima sunt; vigilemus* by Bernard of Cluny (12th century), which runs to 2966 lines. In English the longest is *The Sands of Time are sinking* by Mrs Anne Ross Cousin, née Cundell (1824–1906), which is in full 152 lines, though only 32 lines in the Methodist Hymn Book. The shortest hymn is the single verse in Long Metre *Be Present at our Table Lord*, anon., but attributed to 'J. Leland'.

Most prolific hymnists

Mrs Frances (Fanny) Jane Van Alstyne née Crosby (1820–1915) (USA) wrote 8500 hymns although she had been blinded at the age of 6 weeks. She is reputed to have knocked off one hymn in 15 min. Charles Wesley (1707–88) wrote about 6000 hymns. In the seventh (1950) edition of *Hymns Ancient and Modern* the works of John Mason Neale (1818–66) appear 56 times.

BELLS**Oldest World**

The oldest bell in the world is the tintinnabulum found in the Babylonian Palace of Nimrod in 1849 by Mr (later Sir) Austen Henry Layard (1817–94) dating from c. 1100 BC. The oldest known tower bell is one in Pisa, Italy dated MCVI (1106).

Great Britain

The fragile hand bell known as the Black or Iron Bell of St. Patrick is dated c. AD 450. The oldest tower bell in Great Britain is one of 1 cwt 50 kg at St Botolph, Hardham, Sussex still in use but dated ante 1100. The oldest inscribed bell is the Gargate bell at Caversfield church, Oxfordshire and is dated c. 1200–1210. The oldest dated bell in England is one hanging in Lissett church, near Bridlington, Humberside discovered in October 1972 to bear the date MCCLIII (1254).

Heaviest World

The heaviest bell in the world is the Tsar Kolokol, cast on 25 Nov 1735 in Moscow, USSR. It weighs 193 tons 196 tonnes, measures 5.9 m 19 ft 4¼ in diameter and 5.87 m 19 ft 3 in high, and its greatest thickness is 24 in 60 cm. The bell is cracked, and a fragment, weighing about 11 tons/tonnes was broken from it. The bell has stood, unring, on a platform in the Kremlin, in Moscow, since 1836.

The heaviest bell in use is the Mingun bell, weighing 55,555 viss or 90.52 tons with a diameter of 16 ft 8½ in 5.09 m at the lip, in Mandalay, Burma, which is struck by a teak boom from the outside. It was cast at Mingun late in the reign of King Bodawpaya (1782–1819). The heaviest swinging bell in the world is the Petersglocke in the South-West tower of Cologne Cathedral, Germany, cast in 1923 with a diameter of 3.40 m 11 ft 1¾ in weighing 25.4 tonnes 25.0 tons.

Great Britain

The heaviest bell hung in Great Britain is 'Great Paul' in the south-west tower of St Paul's Cathedral, London, cast in 1881. It weighs 16 tons 14 cwt 2 qrs 19 lb net 17002 kg and has a diam-

enter of 9ft 6in (2.90m) and sounds note E-flat. 'Big Ben', the hour bell in the clock tower of the House of Commons, was cast in 1858 and weighs 13 tons 10 cwt 3 qrs 15 lb 13 761 kg. It is the most broadcast bell in the world and is note E.

Ringing Peals

A ringing peal is defined as a diatonic 'ring' of five or more bells hung for full-circle change ringing. Of 5,500 rings so hung only 70 are outside the United Kingdom and Ireland. The heaviest ring in the world is that of 13 bells cast in 1938-39 for the Anglican Cathedral, Liverpool. The total bell weight is 16½ tons 16,76 tonnes of which Emmanuel, the tenor bell note A, weighs 82 cwt 11 lb 4170,8 kg.

Carillon Largest

The largest carillon (minimum of 23 bells) in the world is the Laura Spelman Rockefeller Memorial carillon in Riverside Church, New York City, USA with 74 bells weighing 102 tons. The bourdon, giving the note lower C, weighs 40,926 lb 18563 kg. This 18.27 ton bell, cast in England, with a diameter of 10ft 2 in 3,09 cm is the largest tuned bell in the world.

Hardest

The heaviest carillon in Great Britain is in St Nicholas Church, Aberdeen, Scotland. It consists of 48 bells, the total weight of which is 25 tons 8 cwt 2 qrs 13 lb 25 838 kg. The bourdon bell weighs 4 tons 9 cwt 3 qrs 26 lb 4 571 kg and is the note G-sharp.

Bell ringing

Eight bells have been rung to their full 'extent' (40,320 unrepeat changes of Plain Bob Major) only once without relays. This took place in a bell foundry at Loughborough, Leicestershire, beginning at 6.52 a.m. on 27 July 1963 and ending at 12.50 a.m. on 28 July, after 17 hr 58 min. The peal was composed by Kenneth Lewis of Altrincham, Greater Manchester, and the eight ringers were conducted by Robert B. Smith, aged 25, of Marple, Greater Manchester. Theoretically it would take 37 years 355 days to ring 12 bells (maximus) to their full extent of 479,001,600 changes. The greatest number of peals (minimum of 5040 changes, all in tower bells) rung in a year is 209 by Mark William Marshall of Ashford, Kent in 1973. The late George E. Fearn rang 2666 peals from 1928 to May 1974. Matthew Lakin (1801-1899) was a regular bell-ringer at Tetney Church near Grimsby for 84 years.

5. GRAMOPHONE

The Guinness Book of British Hit Singles (3rd edition) by Jo and Tim Rice, Paul Gambaccini and Mike Read (£4.99 paperback) lists every one of the 7000 plus records by approximately 2000 acts in the British Top 50 from 14 Nov 1952 to 1 Jan 1981. *The Guinness Book of 500 No 1 Hits* by the same authors is priced £5.95 in paperback.

Origins

The gramophone (phonograph) was first conceived by Charles Cros (1842-88) a French poet and scientist, who described his idea in sealed papers deposited in the French Academy of Sciences on 30 Apr 1877. However the realisation of a practical device was first achieved by Thomas Alva Edison (1847-1931) of the USA. The first successful machine was constructed by his mechanic, John Kruesi on 4-6 Dec 1877, demonstrated on 7 Dec and patented on 19 Feb 1878. Pre-recorded tapes were first marketed by Recording Associates in New York City, USA in 1950.

Earliest

The first practical hand cranked, wax coated cylinder phonograph was manufactured in the United States by Chichester Bell and Charles Sumner Tainter in 1886. The forerunner of the modern disc gramophone was patented in 1887 by Emile Berliner (1851-1929), a German immigrant to the USA. Although a toy machine based on his principle was produced in Germany in 1889, the gramophone was not a serious commercial competitor to the cylinder phonograph until 1896.

Most record players

The country with the greatest number of record players is the United States, with a total in excess of 75,000,000. A total of more than half a billion dollars (now £225 million) is spent

annually on 500,000 juke boxes in the United States. In the US retail sales of discs and tapes reached \$4100 million (then £1440 million) in 1978 which included sales of 273 million stereo LPs and 190 million singles and 127.8 million stereo tapes. In Sweden disc and tape sales were a record \$17.92 (£9.95) per head in 1976.

Smallest record

The smallest functional gramophone record is one 1½ in 3,5 cm in diameter of 'God Save the King' of which 250 were made by HMV Record Co in 1924.

Oldest records

The BBC record library contains over 1,000,000 records, including 5250 with no known matrix. The oldest records in the library are white wax cylinders dating from 1888. The earliest commercial disc recording was manufactured in 1895.

Earliest jazz records

The earliest jazz record made was *Indiana* and *The Dark Town Strutters Ball*, recorded for the Columbia label in New York City, NY, USA, on or about 30 Jan 1917, by the Original Dixieland Jazz Band, led by Dominick (Nick) James La Rocca (1889-1961). This was released on 31 May 1917. The first jazz record to be released was the ODJB's *Livery Stable Blues* (recorded 24 Feb), backed by *The Dixie Jass Band One-Step* (recorded 26 Feb), released by Victor on 7 Mar 1917.

Most successful solo recording artist

On 9 June 1960 the Hollywood Chamber of Commerce presented Harry Lillis (alias Bing) Crosby, Jr (1904-77) with a platinum disc to commemorate the alleged sale of 200,000,000 records from the 2600 singles and 125 albums he had recorded. On 15 Sept 1970 he received a second platinum disc when Decca claimed a sale of 300,650,000 discs. Crosby's first commercial recording was *I've Got the Girl* recorded on 18 Oct 1926 (master number W142785 [Take 3] issued on the Columbia label) and his first million-seller was *Sweet Leilani* in 1937. No independently audited figures of his global life-time sales from his royalty reports have ever been published and experts regard figures so high as this before the industry became highly developed, as exaggerated.

Similarly no independently audited figures have been published for Elvis Aron Presley (1935-77). In view of Presley's worldwide tally of over 170 major hits on singles and over 80 top-selling albums from 1956 continuing after his death, it may be assumed that it was he who succeeded Crosby as the top-selling solo artist of all-time.

Most successful group

The singers with the greatest sales of any group have been the Beatles. This group from Liverpool, Merseyside, comprised George Harrison, MBE (b. 25 Feb 1943), John Ono (formerly John Winston) Lennon, MBE (b. 9 Oct 1940-k. 8 Dec 1980), James Paul McCartney, MBE (b. 18 June 1942) and Richard Starkey, MBE alias Ringo Starr (b. 7 July 1940). The all-time Beatles sales by the end of 1980 have been estimated at over 100 million singles and over 100 million albums.

All 4 ex-Beatles sold several million further records as solo artists. Since their break-up in 1970, it is estimated that the most successful group in the world in terms of record sales is the Swedish foursome ABBA (Agnetha Faltskog, Anni-Frid Lyngstad, Bjorn Ulvaeus and Benny Andersson).

Golden discs Earliest

The earliest recorded piece eventually to aggregate a total sale of a million copies were performances by Enrico Caruso (b. Naples, Italy, 1873, and d. 2 Aug 1921) of the aria *Vesti la giubba* (On with the Motley) from the opera *I Pagliacci* by Ruggiero Leoncavallo (1858-1919), the earliest version of which was recorded with piano on 12 Nov 1902. The first single recording to surpass the million mark was Alma Gluck's *Carry me back to old Virginny* on the Red Seal Victor label on the 12-inch 30,48 cm single faced (later backed) record 74420. The first actual golden disc was one sprayed by RCA Victor for presentation to the US trombonist and band-leader Alton 'Glenn' Miller (1904-44) for his *Chattanooga Choo Choo* on 10 Feb 1942.

The only official measure of million-selling singles and 500,000 selling albums within the United States, is certification by the Recording Industry Association of America introduced 14 Mar 1958. Out of the 2954 RIAA gold record awards made to 1 Jan 1982, the most have gone to The Beatles with 42 (plus one with Billy Preston) as a group. McCartney has 21 more awards outside the group and with Wings. The most awards to an individual is 38 to Elvis Presley (1935-77) spanning 1958 to 1 Jan 1982. Globally however Presley's total of million-selling singles has been authoritatively put at 'approaching 80'.

Most recorded song

Two songs have each been recorded over 1000 times—*Yesterday* written by Paul McCartney and John Lennon (see above) with 1186 versions between 1965 and 1 Jan 1973 and *Tie A Yellow Ribbon Round the old Oak Tree* written by Irwin Levine and L. Russell Brown with more than 1000 from 1973 to 1 Jan 1979.

Most recordings

Miss Lata Mangeshkar (b. 1928) between 1948 and 1974 has reportedly recorded not less than 25,000 solo, duet and chorus backed songs in 20 Indian languages. She frequently had 5 sessions in a day and has 'backed' 1800 films to 1974. Mohammed Rafi (d. 1 Aug 1980) claimed to have recorded 28,000 songs in 11 Indian languages between 1944 and April 1980.

Biggest sellers Singles

The greatest seller of any gramophone record to date is *White Christmas* by Irving Berlin (b. Israel Bailin, at Tyumen, Russia, 11 May 1888) with 25,000,000 for the Crosby single (recorded 29 May 1942) and more than 100,000,000 in other versions. The highest claim for any 'pop' record is an unaudited 25,000,000 for *Rock Around the Clock*, copyrighted in 1953 by James E. Myers under the name Jimmy DeKnight and the late Max C. Friedmann and recorded on 12 Apr 1954 by Bill Haley (1927-1981) and the Comets. The top-selling British record of all-time is *I Want to Hold Your Hand* by the Beatles, released in 1963, with world sales of over 13,000,000. The first single to sell over 2,000,000 copies in Great Britain was *Mull of Kintyre*, released in November 1977, by Wings, a group which includes Paul McCartney (see Beatles above), Linda McCartney (b. New York 24 Sept 1942) and Denny Laine (b. Jersey 29 Oct 1944). It was written by McCartney and Laine.

Albums

The best selling album of all time is the double album (4 sides) of the soundtrack of the film *Saturday Night Fever* with 25 million copies globally. The most popular of the songs were written by the Bee Gees comprising the Manx-born Gibb brothers Barry Alan (b. 1 Sept 1946) and the twins Robin and Maurice (b. 22 Dec 1949).

The best selling album by British performers is considered to be *Dark Side of the Moon* recorded by The Pink Floyd (Dave Gilmour, Nick Mason, Roger Waters and Rick Wright) in June 1972-January 1973 in London, with sales of at least 13 million by the end of 1981.

The charts—US Singles

Singles record charts were first published by *Billboard* on 20 July 1940 when the No. 1 was *I'll Never Smile Again* by Tommy Dorsey (b. 19 Nov 1905, d. 26 Nov 1956). Three discs have stayed top for a record 13 consecutive weeks—*Frenesi* by Artie Shaw from December 1940; *I've Heard that Song Before* by Harry James from February 1943 and *Goodnight Irene* by Gordon Jenkins and the Weavers from August 1950. *I go crazy* by Paul Davis stayed on the chart for 40 consecutive weeks from August 1977. The Beatles have had most No. 1 records (20) and Elvis Presley has had most hit singles on *Billboard's* Hot 100—97 from 1956 to May 1982.

US Albums

Billboard first published an album chart on 15 Mar 1945 when the No. 1 was *King Cole Trio* featuring Nat 'King' Cole (b. 17 Mar 1919, d. 15 Feb 1965). *South Pacific* was No. 1 for 69 weeks (non-consecutive) from May 1949. *Johnny's Greatest Hits* by Johnny Mathis stayed in the chart for 490 weeks (over 9 years) from April 1958. The Beatles had most No. 1's (15) and Presley most hit albums (81 from 1956 to May 1982).



The sleeve of the top-selling LP by British performers, *Dark Side of the Moon* by The Pink Floyd. (*Hypnosis*)

UK Singles

Singles record charts were first published in Britain on 14 Nov 1952 by *New Musical Express*. *I Believe* by Frankie Laine (b. 30 Mar 1913) held No. 1 position for 18 weeks (non-consecutive) from April 1953, with *Rose Marie* by Slim Whitman (b. 20 Jan 1924) the consecutive record holder with 11 weeks from July 1955. The longest stay has been the 122 weeks of *My Way* by Francis Albert Sinatra (b. 12 Dec 1917) in 9 separate runs from 2 Apr 1969 into 1972. The record for an uninterrupted stay is 56 weeks for Engelbert Humperdinck's *Release Me* from 26 Jan 1967. The Beatles and Presley hold the record for most No. 1 hits with 17 each, with Presley having an overall record of 99 hits in the UK singles chart from 1956 to 28 May 1982. The leading British chart maker is Cliff Richard (b. Harry Webb, 14 Oct 1940) with 75 (plus 1 with Olivia Newton-John) from 1958 to 28 May 1982.

Fastest selling LPs

The fastest selling record of all time is *John Fitzgerald Kennedy—A Memorial Album* (Premium Albums), recorded on 22 Nov 1963, the day of Mr Kennedy's assassination, which sold 4,000,000 copies at 99 cents (then 35p) in six days (7-12 Dec 1963), thus ironically beating the previous speed record set by the satirical LP *The First Family* in 1962-3. The fastest selling British record is the Beatles' double album *The Beatles* (Apple) with 'nearly 2 million' in its first week in November 1968.

Advance sales

The greatest advance sale was 2,100,000 for *Can't Buy Me Love* by the Beatles, released in the United States on 16 Mar 1964. The Beatles also equalled their British record of 1,000,000 advance sales, set by *I Want to Hold Your Hand* (Parlophone transferred to Apple, Aug 1968) on 29 Nov 1963, with this same record on 20 Mar 1964. The UK record for advance sales of an LP is 750,000 for the Parlophone album *Beatles for Sale* released on 4 Dec 1964.

Loudest Pop Group

The amplification at *The Who* concert at Charlton Athletic Football Ground, London on 31 May 1976 provided by a Tasco PA System had a total power of 76,000 watts from eighty 800 W Crown DC 300 A Amplifiers and twenty 600 W Phase Linear 200's. The readings at 50 m 164 ft from the front of the sound system were 120 db. *Exposure to such noise levels is known to cause PSH—Permanent Shift of Hearing or partial deafness.*

6. CINEMA

Gammon Superlative has published a more specialist book *Gammon Book of Film Facts and Fun* by Patrick Robertson, priced £8.95.

FILMS

Origins

The earliest motion pictures ever taken were by Louis Aimé Augustin Le Prince (1842–?1890). He reportedly achieved dim moving outlines on a whitewashed wall at the Institute for the Deaf, Washington Heights, New York, USA as early as 1885. The earliest surviving film is from his camera, patented in Britain, taken in early October 1888 of the garden of his father-in-law, Joseph Whitley in Rounday, Leeds, South Yorkshire at 10 to 12 frames per second. The first commercial presentation of motion pictures was at Holland Bros' Kinetoscope Parlour at 1155 Broadway, New York City on 14 April 1894. Viewers could see 5 films for 25 cents or 10 for 50 cents from a double row of Kinetoscopes developed by William Kennedy Laurie Dickson (1860–1935) assistant to Thomas Alva Edison (1847–1931). The earliest publicly presented film on a screen was *La Sortie des Ouvriers de l'Usine Lumière* probably shot in August or September 1894 in Lyon, France. It was exhibited at 44 Rue de Rennes, Paris on 22 Mar 1895 by the Lumière Brothers, Auguste Marie Louis Nicholas (1862–1954) and Louis Jean (1864–1948).

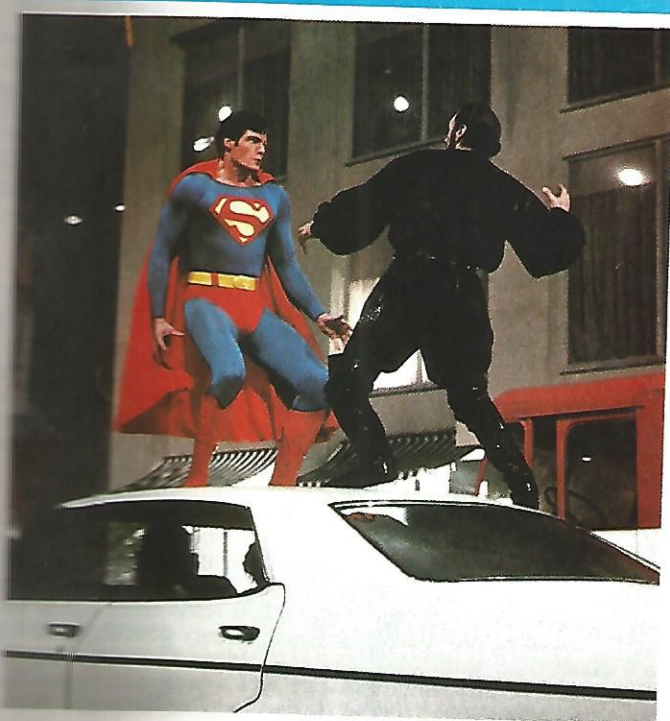
Earliest 'Talkie'

The earliest sound-on-film motion picture was achieved by Eugene Augustin Lauste (b. Paris 17 Jan 1857) who patented his process on 11 Aug 1906 and produced a workable system using a string galvanometer in 1910 at Benedict Road, Stockwell, London. Dr Lee de Forest (1873–1961) was responsible for the screening of the first sound picture before a paying audience at the Rialto Theater, New York City on 15 Apr 1923. The first all-talking feature was Warner Bros' *Lights of New York*, shown at The Strand, New York City, on 6 July 1928 starring Helene Costello.

Most expensive film

The highest ever budgetted film has been *Star Trek* which received its world première in Washington D.C. on 6 Dec. 1979.

A scene from the top-grossing film *Superman II* released in 1981 starring Christopher Reeve in the title role. (Columbia-EMI-Warner Distributors Ltd)



Paramount Studios stated that the cost of this space epic directed by Robert Wise and produced by Gene Roddenberry, was \$46 million (then £21 million). A figure of \$60 million has been attributed to *Superman II* but never substantiated.

Least expensive film

Cecil Hepworth's highly successful release of 1905 *Rescued by Rover* cost £7 13s 9d (then \$37.40).

Most expensive film rights

The highest price ever paid for film rights is \$9,500,000 (then £4,950,000) announced on 20 Jan 1978 by Columbia for *Annie*, the Broadway Musical by Charles Strouse starring Andrea McCardle, Dorothy Loudon and Reid Shelton.

Longest film

The longest film ever premièred was the 48 hr long *The Longest Most Meaningless Movie in the World* in 1970. It was British made and later cut to 90 min.

Highest box office gross

The film which has had the highest world gross earnings is *Star Wars*, written and directed by George Lucas, and produced by Gary Kurtz which from 25 May 1977 to December 1979 grossed \$267 million (then £133.5 million).

Superman II grossed \$5.06 million (£2.53 million) in a single day in 1395 North American cinemas on 20 June 1981.

Largest loss

It was reported on 20 Nov 1980 that United Artists had withdrawn *Heaven Gate* because its total cost including distribution and studio overheads had reached \$57,000,000.

Highest earnings By an actor

The highest rate of pay in cinema history was set by Marlon Brando (b. 3 Apr 1924) for his brief part in *Superman*. He received in excess of \$2,500,000 (then £1,250,000) but the final amount will depend on box office percentages. In July 1980 it was reported that Burt Reynolds (b. 11 Feb 1936) received \$238,095 per day from 20th Century-Fox for his part in *Cannonball Run*.

By a Stuntman

Dar Robinson was paid \$100,000 (then £45,500) for the 1100 ft 335 m leap from the CN Tower, Toronto in Nov 1979 for *High Point*. His parachute opened at only 300 ft 91 m above the ground.

Character most portrayed

The character most frequently recurring on the screen is Sherlock Holmes, created by Sir Arthur Conan Doyle (1859–1930). Sixty-one actors portrayed him in 175 films between 1900 and 1980.

Largest studios

The largest complex of film studios in the world are those at Universal City, L.A., California. The Back Lot contains 561 buildings and there are 34 sound stages on the 420 acre 170 ha site.

Most Prolific Director

Allan Dwan (1885–1981) the Canadian born pioneer directed, from 1909 to the early 'sixties, more than 400 films.

Oscars Most

Walter (Walt) Elias Disney (1901–66) won more 'Oscars'—the awards of the United States Academy of Motion Picture Arts and Sciences, instituted on 16 May 1929 for 1927–8—than any other person. The physical count comprises 20 statuettes, and nine other plaques and certificates including posthumous awards. The only person to win four Oscars in a starring rôle has been Miss Katharine Hepburn, formerly Mrs Ludlow Ogden Smith (b. Hartford, Conn., 9 Nov 1909) in *Morning Glory* (1932–3), *Guess Who's Coming to Dinner* (1967), *The Lion in Winter* (1968) and *On Golden Pond* (1981). She was 13 times nominated. Only 4 actors have won two Oscars in starring



Basil Rathbone as master detective, Sherlock Holmes, the character most often portrayed on screen (see p. 108). (*The Cinema Bookshop*)

rôles—Frederic March (1897–1975) in 1932 and 1946, Spencer Tracy in 1937 and 1938, Gary Cooper in 1941 and 1952, and Marlon Brando in 1954 and 1972. Oscars are named after Mr Oscar Pierce of Texas, USA. The films with most awards have been *Ben Hur* (1959) with 11, followed by *Gone With the Wind* (1939) with 10 and *West Side Story* (1961) with 10. The film with the highest number of nominations was *All About Eve* (1950) with 14. It won six. The youngest ever winner was Shirley Temple (b. 23 Apr 1928) aged 6 in 1934 and the oldest George Burns, (b. 20 Jan 1896) aged 80 for *The Sunshine Boys* in 1976.

Versatility showbusiness awards

Rita Moreno (b. 11 Dec 1931 Rosa Dolores Alverio in Puerto Rico, now Mrs Leonard Gordon) is the only female entertainer to be awarded an Oscar for *West Side Story* (1962); a Grammy for *Electric Company Album* (1972); a regular Tony for *The Ritz* (1975) and an Emmy for *The Muppet Show* (1977) and *The Rockford Files* (1978). Barbra Streisand (b. 24 Apr 1942 in Brooklyn, NY) received Oscar, Grammy and Emmy awards in addition to a special 'Star of the Decade' Tony award.

CINEMAS

Earliest

The earliest structure designed and exclusively used for exhibiting projected films is believed to be one erected at the Atlanta Show, Georgia USA in October 1895 to exhibit C. F. Jenkins' phantoscope. The earliest cinema constructed in Great Britain was built without permission at Olympia, London, to house the 'Theatregraph' promoted by Robert William Paul (1869–1943). This was completed by 16 Apr 1896.

Largest World

The largest cinema in the world is the Radio City Music Hall, New York City, opened on 27 Dec 1932 with 5945 (now 5882) seats. The Roxy, opened in New York City on 11 March 1927 had 6214 (later 5869) seats but was closed on 29 Mar 1960. Cineplex, opened at the Toronto Eaton Centre, Canada on 19 Apr 1979 has 18 separate theatres with an aggregate capacity of 1700.

Great Britain

Great Britain's largest cinema is the Odeon Theatre, Hammer-smith, Greater London, with 3483 seats. The Playhouse, Glasgow had 4235 seats.

The only person ever to win four Oscars in a starring rôle, Miss Katharine Hepburn. From top to bottom, *Morning Glory*, *Guess Who's Coming to Dinner* with Spencer Tracy (who is one of only four actors to win two Oscars in a starring rôle, *The Lion in Winter* with Richard Harris, and *On Golden Pond*).



Drive-In

The world's largest drive-in cinema is Loew's Open Air at Lynn, Mass., USA with a capacity of 5000 cars. The earliest, at Wilson Boulevard, Camden, New Jersey opened on 6 June 1933.

Most cinemas

San Marino has more cinemas per total population than any other country in the world, with 1 cinema for every 1512 inhabitants. Saudi Arabia (population 8.4 million) has no cinemas.

Highest cinema going

The people of the Philippines (population 48.4 million) go to the cinema more often than those of any other country in the world with an average of 19.06 attendances per person per annum (1979-80). The Soviet Union claims to have most cinemas in the world, with 163,400 in 1974, but this includes buildings merely equipped with even 16mm projectors. The USA has 16,965 actual cinemas (1979). The number of cinemas in the UK reached a peak 4714 in 1944 declining to 890 with 1541 screens by 1 Jan 1982. The average weekly admissions has declined from 33,420,000 in 1944 to 1,652,307 in 1981.

Biggest screen

The permanently installed cinema screen with the largest area is one of 100 ft 6 in $\times$ 75 ft 30.6 $\times$ 22.8 m installed in the Imax Theatre, Parques Interama S.A., Buenos Aires, Argentina in December 1981. It was made by Harkness Screens Ltd at Boreham Wood, Herts. A temporary screen 297 ft $\times$ 33 ft 90.5 $\times$ 10 m was used at the 1937 Paris Exposition.

7. THEATRE

Origins

Theatre in Europe has its origins in Greek drama performed in honour of a god, usually Dionysus. The earliest amphitheatres date from the 5th century BC and the largest of all known is one at Megalopolis in central Greece, where the auditorium reached a height of 75 ft 23 m and had a capacity of 17,000. The first stone-built theatre in Rome erected in 55 BC could accommodate 40,000 spectators.

Oldest World

The oldest indoor theatre in the world is the Teatro Olimpico in Vicenza, Italy. Designed in the Roman style by Andrea di Pietro, alias Palladio (1508-80), it was begun three months before his death and finished in 1582 by his pupil Vincenzo Scamozzi (1552-1616). It is preserved today in its original form.

Great Britain

The earliest London theatre was James Burbage's 'The Theatre', built in 1576 near Finsbury Fields, London. The oldest theatre still in use in Great Britain is The Royal, Bristol. The foundation stone was laid on 30 Nov 1764, and the theatre was opened on 30 May 1766 with a 'Concert of Music and a Specimen of Rhetoric'. The City Varieties Music Hall, Leeds was a singing room in 1762 and so claims to outdate the Theatre Royal. Actors were legally rogues and vagabonds until the passing of the Vagrancy Act in 1824. The oldest amateur dramatic society is the Old Stagers inaugurated in Canterbury, Kent in 1841. They have performed in every year except the years of World War I and II.

Largest World

The world's largest building used for theatre is the National People's Congress Building (*Ren min da hui tang*) on the west side of Tian an men Square, Peking, China. It was completed in 1959 and covers an area of 12.9 acres 5.2 ha. The theatre seats 10,000 and is occasionally used as such as in 1964 for the play 'The East is Red'. The highest capacity purpose-built theatre is the Perth Entertainment Centre, Western Australia completed at a cost of \$A 8.3 million (then £4.2 million) in November 1976 with 8003 seats. The stage area is 12,000 ft² 1148 m².

Great Britain

The highest capacity theatre is the Odeon, Hammersmith, Greater London, with 3483 seats in 1982. The largest theatre stage in



Frances Etheridge (US) who has played the character of Lizzie, in *Gold in the Hills* for the last 46 years.

Great Britain is the Opera House in Blackpool, Lancashire. It was re-built in July 1939 and has seats for 2975 people. Behind the 45 ft 14 m wide proscenium arch the stage is 110 ft 33 m high, 60 ft 18 m deep and 100 ft 30 m wide, and there is dressing room accommodation for 200 artistes.

Britain's largest open air theatre is at Scarborough, North Yorkshire opened in 1932 with a seating capacity of 7000 plus standing room for 9000 and a 182 ft 55 m long stage.

Smallest

The smallest regularly operated professional theatre in the world is the Piccolo in Juliusstrasse, Hamburg, West Germany. It was founded in 1970 and has a maximum capacity of 30 seats.

Largest amphitheatre

The largest amphitheatre ever built is the Flavian amphitheatre or Colosseum of Rome, Italy, completed in AD 80. Covering 5 acres 2 ha and with a capacity of 87,000, it has a maximum length of 612 ft 187 m and maximum width of 515 ft 175 m.

Longest Stage

The largest stage in the world is in the Ziegfeld Room Reno, Nevada with 176 ft 53.6 m passerelle, three main lifts each capable of raising 1200 show girls (64¼ tons 65.3 tonnes), two 62½ ft 19.1 m circumference turntables and 800 spotlights.

Longest runs

The longest continuous run of any show in the world is *The Mousetrap* by Dame Agatha Mary Clarissa Christie, DBE (née Miller, later Lady Mallowan) (1890-1976). This thriller opened on 25 Nov 1952, at the Ambassadors Theatre (capacity 453) and moved after 8862 performances 'down the road' to St Martin's Theatre on 25 Mar 1974. The 30th Anniversary performance on 25 Nov 1982 will be the 12,481st. The Vicksburg Theatre Guild of Vicksburg, Mississippi, USA have been playing the melodrama *Gold in the Hills*, by J. Frank Davis discontinuously but every season since 1936.

Revue

The greatest number of performances of any theatrical presentation is 39,521 (to 27 Jan 1982) in the case of *The Golden Horseshoe Revue*—a show staged at Disneyland Park, Anaheim, California, USA. The show was first put on on 16 July 1955 and has been seen by 16 million people. The three main performers

Fulton Bailey, Dick Hardwick and Betty Taylor play as many as five houses a day in a routine lasting 45 min. In Britain, the Brighton Corporation's variety show *Tuesday Night at the Dome* reached its 1500th performance in 36 years on 7 Sept 1982.

Broadway

The long-run record for any Broadway show was set on 8 Dec 1979 with the 3243rd performance of *Grease* at the Royale Theater where it had opened on 27 Nov 1972. It had first opened at the Eden Theater on 14 Feb 1972 and closed after 3388 performances on 13 Apr 1980. The book, music and lyrics were written by Jim Jacobs (b. Chicago, 1942) and Warren Casey (b. Yonkers, NY, 1935). Profits of \$4 million have accrued to the producers Kenneth Weissman and his wife Maxine Fox from the gross \$70 million in the US alone. The off-Broadway musical show *The Fantasticks* by Tom Jones and Harvey Schmidt achieved its 9149th performance as it entered its 23rd year at the Sullivan Street Playhouse, Greenwich Village, New York City on 2 May 1982. It has been played in a record 4500 productions in 57 countries.

Musical shows

The longest-running musical show ever performed in Britain was *The Black and White Minstrel Show* later *Magic of the Minstrels*. The aggregate but discontinuous number of performances was 6464 with a total attendance of 7,794,552. The show opened at the Victoria Palace, London on 25 May 1962 and closed on 4 Nov 1972. It re-opened for a season in June 1973 at the New Victoria and finally closed on 8 Dec 1973.

Jesus Christ Superstar, which opened at Palace Theatre, London on 8 Aug 1972, passed *Oliver* with its 2620th performance on 3 Oct 1978. It closed on 23 Aug 1980 after 3357 performances.

Shortest runs World

The shortest run on record was that of *The Intimate Revue* at the Duchess Theatre, London, on 11 Mar 1930. Anything which could go wrong did. With scene changes taking up to 20 min apiece, the management scrapped seven scenes to get the finale on before midnight. The run was described as 'half a performance'.

Broadway

The opening and closing nights of many Broadway shows have coincided. Spectacular failures are known as 'turkeys' of which there were 11 in 1978-79. The biggest loss incurred was an estimated \$2,000,000 on *Frankenstein* which opened and closed on Broadway on 4 Jan 1981.

Lowest attendance

The first recorded one-man show in which the one man comprised the audience occurred at the Oldham Grange Arts Centre, Lancashire on 23 Oct 1980 when Mr Ronald Bradbury made theatrical history by sitting through *Oh Mistress Mine* in solitary state.

Youngest Broadway producer

Margo Feiden (Margo Eden) (b. New York, 2 Dec 1944) produced the musical *Peter Pan*, which opened on 3 Apr 1961 when she was 16 years 5 months old. She wrote *Out Brief Candle*, which opened on 18 Aug 1962. She is now a leading art dealer.

One-man shows

The longest run of one-man shows is 849 by Victor Borge (b. Copenhagen, 3 Jan 1909) in his *Comedy in Music* from 2 Oct 1953 to 21 Jan 1956 at the Golden Theater, Broadway, New York City. The world aggregate record for one-man shows is 1700 performances of *Brief Lives* by Roy Dotrice (b. Guernsey, 26 May 1923) including 400 straight at the Mayfair Theatre, London ending on 20 July 1974. He was on stage for more than 2½ hr per performance of this 17th century monologue and required 3 hr for make up and 1 hr for removal of make-up so aggregating 40 weeks in the chair.

Most durable leading actress

Dame Anna Neagle, DBE (b. 20 Oct 1904) played the lead role in *Charlie Girl* at the Adelphi Theatre, London for 2062 of 2202 performances between 15 Dec 1965 and 27 Mar 1971. She

AMBASSADORS THEATRE, West St. Cambridge Circus, W.C.2
 Monday to Friday: 7.30 Saturday: 5.15 and 8.0 Tuesday: 2.30
 Stalls: 15/-, 10/6, 8/6; Dress Circle: 15/-, 10/6, 8/6, 5/6; Pit (unreserved): 3/6; BOX OFFICE Temple Bar 1171

Peter Saunders presents
Richard Attenborough
Sheila Sim in
THE MOUSETRAP
 by Agatha Christie

With
 Jessica Spencer
 Aubrey Dexter
 Mignon O'Doherty
 Allan McClelland
 John Paul
 and
 Martin Miller

DIRECTED BY PETER COTES

Décor by Roger Furse



above: The original play bill for what was to become the longest running show of any kind in the world (see p. 110). (*The Raymond Mander and Joe Mitchenson Theatre Collection*)
 below: Ronald Bradbury who sat in solitude to watch a performance of *O Mistress Mine* at the Oldham Grange Arts Centre. (*Associated Newspapers Ltd*)



played the role a further 327 times in 327 performances in Australia.

Frances Ederidge has played Lizzie, the housekeeper, in *Gold in the Hills* (see *Longest Runs*) more than 660 times in 46 years since 1936.

Most roles

The greatest recorded number of theatrical, film and television roles is 2017 from 1951 to April 1982 by Jan Leighton (US).

Longest play

The longest recorded theatrical production has been *The Warp* by Neil Oram directed by Ken Campbell, a 10 part play cycle played at the Institute of Contemporary Art, The Mall, London, on 18–20 Jan 1979. Russell Denton was on stage for all but 5 min of the 18 hr 5 min. The three intermissions totalled 3 hr 10 min.

Shakespeare

The first all-amateur company to have staged all 37 of Shakespeare's plays was The Southsea Shakespeare Actors, Hampshire, England (founded 1947), when in October 1966 they presented *Cymbeline*. The amateur director throughout was Mr K. Edmonds Gateley, MBE. The longest is *Hamlet* with 4042 lines and 29,551 words. Of Shakespeare's 1277 speaking parts the longest is *Hamlet* with 11,610 words.

Longest chorus line

The 63 'Atomic Girls' of the Shochiku Revue danced in line in the Kokusai Theatre, Tokyo in the revue's 49th season in 1980 in a 4½ minute routine.

Cabaret

The highest paid entertainer is Wayne Newton (b. 1942) who is paid up to \$250,000 (now £113,650) per performance in Las Vegas hotels by the Summa Corporation.

Ice shows

Holiday on Ice Production Inc, founded by Morris Chalfen in 1945, stages the world's most costly live entertainment with up to seven productions playing simultaneously in several of 75 countries drawing 20,000,000 spectators paying \$40 million (£22.2 million) in a year. The total skating and other staff exceeds 900. The most prolific producer of Ice Shows is Gerald Palmer with 137 since 1945 including 34 consecutive shows at Empire Pool, Wembley, London with attendances up to 850,000. Hazel Wendy Jolly (b. 1933) has appeared in the Wembley Winter Pantomime for 27 years.

Most ardent theatre-goers

It has been estimated by the press that H. Howard Hughes (b. 1904) of Fort Worth, Texas, had seen 4160 shows in the period 1956–76. Britain's leading 'first nighter' Edward Sutro MC (1900–78) saw 3000 first night productions in 1916–56 and possibly more than 5000 in his 60 years of theatre-going. The highest precisely recorded number of theatre attendances in Britain is 3522 shows in 29 years from 28 Mar 1953 to 28 Mar 1982 by John Iles of Salisbury, Wiltshire. He estimates he has travelled 142,969 miles 230 086 km and seen 170,697 performers in 9167 hours (over 54½ weeks) inside theatres.

The world's largest arts festival is the annual Edinburgh Festival Fringe (instituted in 1959). In 1981, 494 groups gave 6484 performances of 739 shows.

Fashion shows

The most prolific producer and most durable commentator of fashion shows is Adalene Ross of San Francisco, California with totals over 4692 in both categories to mid-1982.

Professional wrestling

The professional wrestler who has received most for a single bout has been Kanii Antonio Inoki of Japan on 26 Jun 1976. He received \$2 million for the drawn wrestler v boxer bout against Muhammad Ali in the Budokan Arena, Tokyo. Lou Thesz has won 7 of the world's many 'world' titles. 'Fabulous' Moolah has won major US women's alliance titles every year since 1956. The heaviest ever wrestler has been William J. Cobb of Macon,

Georgia, USA (b. 1926), who was billed in 1962 as the 802 lb 367 kg (57 m 48 in) 'Happy' Humphrey. Ed 'Strangler' Lewis (1890–1966) vs Robert H. Friedrich, fought 6200 bouts in 44 years losing only 33 matches. He won world titles in 1921, 1922, 1928 and 1931–32.

8. RADIO BROADCASTING

Origins

The earliest description of a radio transmission system was written by Dr Mahlon Loomis (USA) (b. Fulton County, NY, 21 July 1826) on 21 July 1864 and demonstrated between two kites more than 14 miles 22 km apart at Bear's Den, Loudoun County, Virginia in October 1866. He received US patent No. 129,971 entitled Improvement in Telegraphing on 20 July 1872. He died in 1886.

Earliest patent

The first patent for a system of communication by means of electro-magnetic waves, numbered No. 12039, was granted on 2 June 1896 to the Italian-Irish Marchese Guglielmo Marconi, GCVO (Hon) (1874–1937). A public demonstration of wireless transmission of speech was, however, given in the town square of Murray, Kentucky, USA in 1892 by Nathan B. Stubblefield. He died destitute on 28 March 1928. The first permanent wireless installation was at The Needles on the Isle of Wight, by Marconi's Wireless Telegraph Co., Ltd., in November 1896.

Earliest broadcast World

The world's first advertised broadcast was made on 24 Dec 1906 by the Canadian born Prof Reginald Aubrey Fessenden (1868–1932) from the 420 ft 128 m mast of the National Electric Signalling Company at Brant Rock, Massachusetts, USA. The transmission included Handel's *Largo*. Fessenden had achieved the broadcast of speech as early as November 1900 but this was highly distorted.

Great Britain

The first experimental broadcasting transmitter in Great Britain was set up at the Marconi Works in Chelmsford, Essex, in December 1919, and broadcast a news service in February 1920. The earliest regular broadcast was made from the Marconi transmitter '2 MT' at Writtle, Essex, on 14 Feb 1922.

Transatlantic transmissions

The earliest transatlantic wireless signals (the letter S in Morse Code) were received by Marconi, George Stephen Kemp and Percy Paget from a 10 kW station at Poldhu, Cornwall, at Signal Hill, St John's, Newfoundland, Canada, at 12.30 p.m. on 12 Dec 1901. Human speech was first heard across the Atlantic in November 1915 when a transmission from the US Navy station at Arlington, Virginia was received by US radio-telephone engineers on the Eiffel Tower.

Earliest radio-microphones

The radio-microphone, which was in essence also the first 'bug', was devised by Reg Moores (GB) in 1947 and first used on 76 MHz in the ice show *Aladdin* at Brighton Sports Stadium, East Sussex in September 1949.

Longest BBC national broadcast

The longest BBC national broadcast was the reporting of the Coronation of Queen Elizabeth II on 2 June 1953. It began at 10.15 a.m. and finished at 5.30 p.m., after 7 hr 15 min.

Longest continuous broadcast World

The longest continuous broadcast (excluding disc-jockeying) has been one of 373 hr 35 min by Bruce 'Spanky' Smith of KCRJ-FM96 Radio, Arizona, USA. No further claims for these categories will be entertained.

Local and Hospital radio

The longest local radio transmission has been 84 hr by Robert W. Morgan of Community Radio Station WKRC, Co. Kildare, Ireland on 8–11 Jan 1982. Brian Sheard completed 208 hr 15 min of broadcasting on Manchester Hospital Radio on 15–23 Feb 1980.

Brain of Britain Quiz

The youngest person to become 'Brain of Britain' on BBC radio was Anthony Carr, 16, of Anglesey in 1956. The oldest contestant has been the author and translator Hugh Merrick (d. 1981) in his 80th year in August 1977. The record score is 35 by the 1981 winner Peter Barlow of Richmond, Surrey.

Most durable programmes BBC

The longest running BBC radio series is *The Week's Good Cause* beginning on 24 Jan 1926. The longest running record programme is *Desert Island Discs* which began on 29 Jan 1942 and on which programme only one guest, Arthur Askey CBE, has been stranded a fourth time (on the 1572nd show on 20 Dec 1980). The *Desert Island* programme has been presented since its inception by Roy Plomley, OBE who devised the idea. The longest running solo radio feature is *Letter from America* by (Alfred) Alistair Cooke, Hon KBE (b. Salford 20 Nov 1908), first broadcast on 24 Mar 1946. The longest running radio serial is *The Archers* which was created by Godfrey Baseley and was first broadcast on 29 May 1950. Up to May 1981 the signature tune *Barwick Green* had been played over 32,000 times. The only one of 363 roles which has been played without interruption from the start has been that of Philip Archer by Norman Painting OBE (b. Leamington Spa, 23 Apr 1924).

Earliest antipodal reception

Frank Henry Alfred Walker (b. 11 Nov 1904) on the night of 12 Nov 1924 received on his home-made 2 valve receiver on 75 metres, signals from Marconi's yacht *Electra* (call sign ICCM) in Australian waters at Crown Farm, Cuttimore Lane, Walton-on-Thames, Surrey, England.

Most stations

The country with the greatest number of radio broadcasting stations is the United States, where there were 9317 authorised broadcast stations in Feb 1982 of which 4641 were AM (Amplitude modulation) and 4676 FM (Frequency modulation).

Highest listenership

The peak recorded listenership on BBC Radio was 30,000,000 adults on 6 June 1950 for the boxing fight between Lee Savold (US) and Bruce Woodcock (GB) (b. Doncaster, S. Yorks, 1921).

Highest response

The highest recorded response from a radio show occurred on 27 Nov 1974 when on a 5 hr talk show on WCAU, Philadelphia, USA, Howard Sheldon, the astrologist registered a call count of 388,299 calls on the 'Bill Corsair Show'.

9. TELEVISION

Invention

The invention of television, the instantaneous viewing of distant objects by electrical transmissions, was not an act but a process of successive and inter-dependent discoveries. The first commercial cathode ray tube was introduced in 1897 by Karl Ferdinand Braun (1850-1918), but was not linked to 'electric vision' until 1907 by Boris Rosing of Russia in St Petersburg (now Leningrad). A. A. Campbell Swinton FRS (1863-1930) published the fundamentals of television transmission on 18 June 1908 in a brief letter to *Nature* entitled 'Distant Electric Vision'. The earliest public demonstration of television was given on 27 Jan 1926 by John Logie Baird (1888-1946) of Scotland, using a development of the mechanical scanning system suggested by Paul Nipkov in 1884. He had achieved the transmission of a Maltese Cross over 10 ft 3.05 m at 8, Queen's Arcade, Hastings, East Sussex in February 1924 and the first facial image (of William Taynton, 15) at Frith Street on 30 Oct 1925. Taynton had to be bribed with 2s 6d. A patent application for the Iconoscope had been filed on 29 Dec 1923 by Dr Vladimir Kosma Zworykin (born in Russia on 30 July 1889, became a US citizen in 1924). It was not issued until 20 Dec 1938. The patent filed by Philo Taylor Farnsworth (US) on 7 Jan 1927 was however granted on 26 Aug 1930. Farnsworth succeeded with a low definition image at 202 Green Street, Los Angeles in November 1927. The first experimental transmission in Britain was on 30 Sept 1929. Public transmissions on 30 lines were made from 22 Aug 1932 until 11 Sept 1935.



Roy Plomley OBE (left) the presenter of *Desert Island Discs*, the longest running record programme, with his guest, Paul McCartney MBE, himself holder of Guinness records (see Gramophone). (BBC)

Earliest service

The world's first high definition (i.e. 405 lines) television broadcasting service was opened from Alexandra Palace, Haringey, Greater London, on 2 Nov 1936, when there were about 100 sets in the United Kingdom. The Chief Engineer was Mr Douglas Birkinshaw. A television station in Berlin, Germany, made a low definition (180 line) transmission from 22 Mar 1935. The transmitter burnt out in Aug 1935.

Transatlantic transmission

The earliest transatlantic transmission by satellite was achieved at 1 a.m. on 11 July 1962, via the active satellite *Telstar 1* from Andover, Maine, USA, to Pleumeur Bodou, France. The picture was of Mr Frederick R. Kappell, chairman of the American Telephone and Telegraph Company, which owned the satellite. The first 'live' broadcast was made on 23 July 1962 and the first woman to appear was the *haute couturière*, Ginette Spanier, directrice of Balmain, the next day. On 9 Feb 1928 the image of J. L. Baird (see above) and of a Mrs Howe was transmitted from Station 2 KZ at Coulsdon, Surrey, England to Station 2 CVJ, Hartsdale, NY, USA.

Longest telecast

The longest pre-scheduled telecast on record was a continuous transmission for 163 hr 18 min by GTV 9 of Melbourne, Australia covering the Apollo XI moon mission on 19-26 July 1969. The longest continuous TV transmission under a single director was the Avro Television Production *Open het Dorp* transmitted in the Netherlands on 26-27 Nov 1962 for 23 hr 20 min under the direction of Theo Ordeman.

Video-tape recording Earliest

Alexander M. Poniatoff first demonstrated video-tape recording known as Ampex (his initials plus 'ex' for excellence) in 1956. The earliest demonstration of a home video recorder was on 24 June 1963 at the BBC News Studio at Alexandra Palace, London of the Telcan developed by Norman Rutherford and Michael Turner of the Nottingham Electronic Valve Co.

Most durable shows World

The world's most durable TV show is NBC's *Meet the Press* first transmitted on 6 Nov 1947 and weekly since 12 Sept 1948, originated by Lawrence E. Spivak, who appeared weekly as either moderator or panel member until 1975. On 11 Dec 1980 Mike Douglas presented the 4754th version of his show started in 1960.

Great Britain

The longest running TV programme on BBC is *Panorama* which was first transmitted, introduced by Patrick Murphy, on 11 Nov 1953. *Andy Pandy* was first transmitted on 11 July 1950 but consisted of repeats of a cycle of 26 shows until 1970. The seasonal programme *Come Dancing* was first transmitted on 29 Sept 1950. *The News* started on 21 Mar 1938 in sound only. The regular daily TV News began on 5 July 1954. The puppet show *Sooty*, devised by Harry Corbett (b. Bradford, 1918) has been transmitted every year since 1952 and is now presented by his son, Matthew.

Most sets

The December 1983 projection for US TV households is 84,800,000, with 32.2 million on Cable TV, 17.8 million on Pay TV and 25 million on Subscription satellite TV, with 3.4 million having video disc or video cassette. The number of homes with colour sets was 66,250,000 (85%) by January 1981. The number of licences current in the United Kingdom was 18,430,806 on 1 Mar 1982 of which 14,138,761 (76.71 per cent) were for colour sets. Black and white licences became less commonplace than colour in 1976.

TV Watching

In July 1978 it was estimated that the average American child by his or her 18th birthday has watched 710 solid days (17,040 hours) of TV, seen more than 350,600 commercials and more than 15,000 TV murders. There are 571 TV sets per 1000 people in the USA compared with 348 in Sweden and 330 in Britain.

Most television free

Iceland has a TV free day on Thursdays to reduce disruption of family life. Otherwise transmissions are normally limited to between 8 and 11 p.m. with, in July 1982, a TV free month. Upper Volta had by 1974 only one set per 1000 of the population.

Greatest audience

The greatest estimated number of viewers worldwide for a televised event is 1000 million for the live and recorded transmissions of the XXth and XXIst Olympic Games in Munich, W Germany and Montreal, Canada in 1972 and 1976. The estimate for the papal visit to Ireland by Pope John Paul II on 29 Sept 1979 was also 1000 million. The crowd in Phoenix Park, Dublin for Mass was however at 1.3 million even greater than Radio Telefis Eireann's national audience.

The programme which attracted the highest ever viewership was the episode of *Dallas* transmitted by CBS on 21 Nov 1980 to 53.3 per cent of all households in the United States. It was estimated that some 83 million people watched in these 41.4 million homes which took a 76 per cent share of all viewing at 10 pm, E.S.T. The UK record is 39 million for the wedding of TRH the Prince and Princess of Wales in London on 29 July 1981.

Largest production

The BBC production of the 37 plays of Shakespeare in 1978-84 will cost a minimum of £6,800,000. The new series was conceived by its producer Cedric Messina.

Largest contracts World

The highest rate for any TV contract ever signed was one for \$7 million (then £3,100,000) for 7 hours of transmission by Marie Osmond by NBC announced on 9 Mar 1981. The figure includes talent and production costs.

Currently television's highest-paid performer is John William Carson (b. 23 Oct 1925), the host of *The Tonight Show*. His current NBC contract reportedly calls for annual payment of \$5,000,000 (now £2,275,000) for his one hour evening show aired four times weekly. The highest-paid current affairs or news performer is Barbara Walters of ABC *The Evening News* programme, who signed a 5-year \$1 million (then £525,000) a year contract on or about 21 Apr 1976.

Great Britain

The largest contract in British television was one of a reported £9,000,000, inclusive of production expenses, signed by Tom Jones (b. Thomas Jones Woodward, 7 June 1940) of Treforest, Mid Glamorgan, Wales in June 1968 with ABC-TV of the United States and ATV in London for 17 one-hour shows per annum from January 1969 to January 1974.

Highest paid TV actor

Alan Alda, star of the *M*A*S*H* series receives a record \$225,000 (£102,000) per episode thereby totalling \$5.4 million (£2,448,000) for 24 episodes in a year. Peter Falk (b. 16 Sept 1927), the disarmingly persistent detective *Columbo*, was paid from \$300,000 to \$350,000 for a single episode of his series of six so totalling \$1,950,000 (then £1,147,000) in 1976. In 1980 Carroll O'Connor, star of *Archie Bunker's Place* was contracted for \$200,000 (then £90,900) for each of the season's 24 episodes.

Largest TV prizes World

On 24 July 1975 WABC-TV, New York City transmitted the first televised Grand Tier draw of the State Lottery in which the winner took the grand prize of \$1,000,000 (now £454,545). This was however taxable. Mary Buchanan, 15, won a prize of \$25,000 for 40 years (viz. \$1,000,000) on WKRC, Cincinnati on 21 Nov 1980.

Most successful appeals

The Jerry Lewis Labor Day Telethon on 4 Sept 1979 raised \$31,103,787 (then £14,138,000) in pledges for the Muscular Dystrophy Association. The East African Emergency Appeal broadcast on BBC TV by Sue Lawley on 19 June 1980, reached £5,591,643 in donations (excluding government grant), banked when it closed on 3 Apr 1981 for the five distributing charities.

Biggest sale

The greatest number of episodes of any TV programme ever sold has been 1144 episodes of 'Coronation Street' by Granada Television to CBKST Saskatoon, Saskatchewan, Canada, on 31 May 1971. This constituted 20 days 15 hr 44 min continuous viewing. A further 728 episodes (Jan 1974-Jan 1981) were sold to CBC in 1982.

Most prolific scriptwriter

The most prolific television writer in the world is the Rt Hon Lord Willis known as Ted Willis (b. 13 Jan 1918), who in the period 1949-82 has created 25 series, including the first seven years and 2,250,000 words of *Dixon of Dock Green* which ran from 1955 to 1976, 25 stage plays and 24 feature films. He had 21 plays produced. His total output since 1942 can be estimated at 17,000,000 words.

'Mastermind' Records

The BBC TV series began on 11 Sept 1972 producing a record 37 points by Francis Lambert (on 'Brazil Since Independence') in 1975 and by Sir David Hunt KCMG, OBE (on 'The Roman Revolution (60 BC-AD 40)') in the 1977 final. Sir David won the 'Mastermind Champions' contest on 3 May 1982.

TV Producer

The most prolific TV producer in the world is Aaron Spelling (b. 1928) who, in 25 years from 1956 to 1981, produced 1100 TV episodes totalling 1457½ hours of air time. His output included *Starsky and Hutch* (89 episodes) and *Charlie's Angels* (109 episodes).

Highest TV advertising rates

The highest TV advertising rate has been \$550,000 per min (then £3820 per sec) for NBC network prime time during the transmission of *Super Bowl* on 24 Jan 1981. In Great Britain the peak time weekday 60 sec spot rate (6.00-10.35 p.m.) for Thames Television is £33,152+VAT for a booking within 4 weeks of transmission (November 1982).

Most takes

The highest number of 'takes' for a TV commercial is 28 in 1973 by Pat Coombs, the comedienne, who has supported Dick Emery on BBC TV. Her explanation was 'Everytime we came to the punch line I just could not remember the name of the product'.

Commercials records

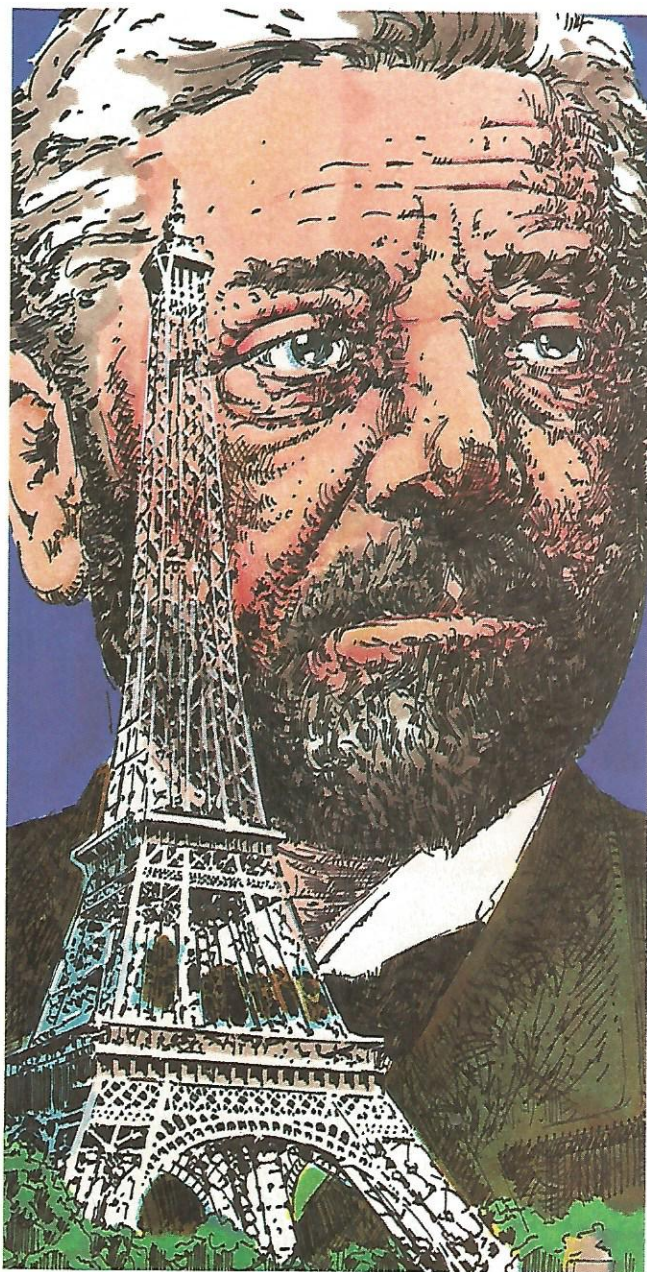
In 1977 James Coburn of Beverly Hills, California was reputed to have been paid \$500,000 (then £250,000) for uttering two words on a series of Schlitz beer commercials. The words 'Schlitz Light' were thus at a quarter of a million dollars per syllable. Brooke Shields (b. 31 May 1965) was reportedly paid \$250,000 (then £125,000) for one minute of film by a Japanese TV commercial film maker in 1979. Faye Dunaway was reported in May 1979 to have been paid \$900,000 (then £450,000) for uttering 6 words for a Japanese department store TV commercial. Britain's most durable TV Commercial has been the Brooke Bond chimpanzee commercial first transmitted on 21 Nov 1971 and 1687 more times to October 1979.

Thinnest set

The Sony FD 200 weighing 540 g 8.4 oz marketed in February 1982 is only 33 mm 0.12 in thick. The 250 line picture is on a 50 mm 0.19 in screen (measured diagonally).

7. The World's Structures

GUINNESS BOOK OF RECORDS



Tallest tower built before television mast era

The earliest known human structure is a rough circle of loosely piled lava blocks found in 1961 on the lowest cultural level at the Lower Palaeolithic site at Olduvai Gorge in Tanzania. The structure was associated with artifacts and bones and may represent a work-floor, dating to c. 1,750,000 ac. The earliest evidence of buildings yet discovered is that of 21 huts with hearths or pebble-lined pits and delimited by stake holes found in October 1965 at the Terra Amata site in Nice, France thought to belong to the Acheulian culture of 120,000 years ago. Excavation carried out between 28 June and 5 July 1966 revealed one hut with palisaded walls with axes of 49 ft 15 m and 20 ft 6 m. The oldest free standing structures in the world are now believed to be the megalithic temples at Mgarr and Skorba in Malta and Ggantija in Gozo dating from c. 3250 BC. The remains of a stone tower 20 ft 6.1 m high originally built into the walls of Jericho has been excavated and is dated to 5000 BC.

Britain

A rudimentary platform of birch branches, stones and wads of clay thrown down on the edge of a swamp at Star Carr, south of Scarborough, North Yorkshire, may possibly represent the earliest man-made 'dwelling' yet found in Britain (Mesolithic, 7607 BC $\pm$ 210). A dwelling area in a depression associated with hearths at Broom Hill, Braishfield, Hants have been dated to 6365 BC $\pm$ 150. Remains of the earliest dated stone shelter and cooking pit were discovered in 1967 at Culver Well, Isle of Portland, Dorset (Mesolithic, 5200 BC $\pm$ 135). On the Isle of Jura, Strathclyde, Scotland a hearth consisting of three linked stone circles has been dated to the Mesolithic period 6013 $\pm$ 200 BC. The only original piece of Roman building from the 1st century AD surviving is the bottom 14 ft 4.25 m of the Dover beacon.

Ireland

The earliest known structures in Ireland date from the Mesolithic period c. 6850–6500 BC. A series of pits associated with post-holes have been excavated at a living site at Mount Sandel, Co. Derry.

1. BUILDINGS FOR WORKING

LARGEST BUILDINGS

Industrial

The largest industrial plant in the world is the Nizhny Tagil Railroad Car and Tank Plant, USSR which has 827 000 m² or 204.3 acres of floor space. It has an annual capacity to produce 2500 T-72 tanks.

Commercial World

The greatest ground area covered by any building in the world under one roof is the auction building of the Co-operative VBA (Verenigde Bloemenveilingen Aalsmeer), which measures 808.75 $\times$ 375 m 884.4 $\times$ 410.1 yds with a floor surface of 303 282 m² 74.94 acres. The first section of this site of the world's largest flower auction at Aalsmeer, Netherlands was completed in February 1972. The building with the largest cubic capacity in the world is the Boeing Company's main assembly plant at Everett, Washington State, USA completed in 1968 with a capacity of 200 million ft³ 5.6 million m³.

Britain

The largest building in Britain is the Ford Parts Center at Daventry, Northamptonshire, which measures 1,978 $\times$ 780 ft 602 $\times$ 237 m and 1.6 million ft² or 36.7 acres 14,86 ha. It was opened on 6 Sept 1972 at a cost of nearly £8 million. It employs 1600 people and is fitted with 14,000 fluorescent lights.

Scientific

The most capacious scientific building in the world is the Vehicle Assembly Building (VAB) at Complex 39, the selected site for the final assembly and launching of the Apollo moon spacecraft on the Saturn V rocket, at the John F. Kennedy Space Center (KSC) on Merritt Island, Cape Canaveral, Florida, USA. It is a steel-framed building measuring 716 ft 218 m in length, 518 ft 158 m in width and 525 ft 160 m high. The building contains four bays, each with its own door 460 ft 140 m high. Construction began in April 1963 by the Ursum Consortium. Its



top: The world's tallest unsupported structure—Toronto's 1822 ft 555 m CN Tower which is struck by lightning about 200 times a year.
above: The largest office building in the world, The World Trade Center in New York City with a total of 200.64 acres 81.2 ha of rentable space. (John Rivers)

floor area is 343,500 ft² (7.87 acres 3.18 ha) and its capacity is 129,482,000 ft³ 3 666 500 m³. The building was 'topped out' on 14 Apr 1965 at a cost of \$108,700,000 (then £38.8 million).

Administrative

The largest ground area covered by any office building is that of the Pentagon, in Arlington, Virginia, USA. Built to house the US Defense Department's offices it was completed on 15 Jan 1943 and cost an estimated \$83,000,000 (then £20,595,000). Each of the outermost sides of the Pentagon is 921 ft 281 m long and the perimeter of the building is about 1500 yd 1370 m. The five storeys of the building enclose a floor area of 6,500,000 ft²

604 000 m² (149.2 acres 60.3 ha). During the day 29,000 people work in the building. The telephone system of the building has over 44,000 telephones connected by 160,000 miles 257 500 km of cable and its 220 staff handle 280,000 calls a day. Two restaurants, six cafeterias and ten snack bars and a staff of 675 form the catering department of the building. The corridors measure 17 miles 27 km in length and there are 7748 windows to be cleaned.

Office

The largest office buildings with the largest rentable space in the world are The World Trade Center in New York City, USA with a total of 4,370,000 ft² 406 000 m² (100.32 acres 40.6 ha) in each of the twin towers of which the taller Tower Two (formerly B) is 1362 ft 3/4 in 415.22 m. The tip of the TV antenna on Tower One is 1710 ft 521.2 m above street level.

Single office Great Britain

The largest single office in the United Kingdom is that of West Midlands Gas at Solihull, West Midlands, built by Spooners (Hull) Ltd in 1962. It now measures 753 ft by 160 ft 230 by 49 m (2.77 acres 1.12 ha) in one open plan room accommodating 2170 clerical and managerial workers.

TALLEST BUILDINGS

World

The tallest office building in the world is the Sears Tower, the national headquarters of Sears, Roebuck & Co. in Wacker Drive, Chicago, Illinois with 110 storeys rising to 1454 ft 443 m and begun in August 1970. Its gross area is 4,400,000 ft² (101.0 acres 40.8 ha). It was 'topped out' on 4 May 1973. It surpassed the World Trade Center in New York City in height at 2.35 p.m. on 6 Mar 1973 with the first steel column reaching to the 104th storey. The addition of two TV antennae brought the total height to 1559 ft 475.18 m. The building's population is 16,700 served by 103 elevators and 18 escalators. It has 16,000 windows.

Asia

Asia's tallest building, where many buildings must be made resistant to earthquakes, is the 60 storey 'Sunshine 60' in Ikebukuro, Tokyo, Japan completed in 1978 to a height of 240 m 787.4 ft. (See also Passenger lifts, fastest).

Great Britain

The tallest office block in Britain and the tallest cantilevered building in the world is the £72 million National Westminster tower block in Bishopsgate, City of London completed in 1979. It has 49 storeys and 3 basement levels, serviced by 21 lifts, and is 600 ft 4 in 183 m tall. The gross floor area is 636,373 ft² 59,121 m² (14.6 acres 5.9 ha). The view from the top extends over 8 counties.

Merseyside County Council unveiled highly tentative plans for a £500 million 139 storey 1825 ft 556.2 m tall office block on 9 Nov 1979.

HABITATIONS

Greatest altitude

The highest inhabited buildings in the world are those in the Indian-Tibet border fort of Bāsisi at c. 19,700 ft 5988 m. In April 1961, however, a 3-room dwelling was discovered at 21,650 ft 6600 m on Cerro Llullaillaco (22,058 ft 6723 m), on the Argentine-Chile border, believed to date from the late pre-Columbian period c. 1480. An unnamed settlement on the T'e-li-mo trail in southern Tibet is at an apparent altitude of 19,800 ft 6019 m.

Northernmost

The most northerly habitation in the world is the Danish Scientific station set up in 1952 in Pearyland, northern Greenland, over 900 miles 1450 km north of the Arctic Circle. Eskimo hearths dated to before 1000 BC were discovered in Pearyland in 1969. The USSR and the United States have maintained research stations on ice floes in the Arctic. The USSR's 'North Pole 15', which drifted 1250 miles 2000 km, passed within 1 1/4 miles 2.8 km of the North Pole in December 1967.

The most northerly continuously inhabited place is the Canadian Department of National Defence outpost at Alert on Ellesmere Island, Northwest Territories in Lat. 82° 30' N, Long. 62° W, set up in 1950.

Southernmost

The most southerly permanent human habitation is the United States' Scott-Amundsen South Polar Station (see page 68) completed in 1957 and replaced in 1975.

EMBASSIES AND CIVIC BUILDINGS

Largest

The largest embassy in the world is the USSR embassy on Bei Xiao Jie, Peking, China, in the north-eastern corner of the Northern walled city. The whole 45 acre 18.2 ha area of the old Orthodox Church mission (established 1728), now known as the *Bei guan*, was handed over to the USSR in 1949. The largest in Great Britain is the United States of America Embassy in Grosvenor Square, London. The Chancery Building, completed in 1960, alone has 600 rooms for a staff of 700 on seven floors with a usable floor area of 255,000 ft² (5.85 acres 2.37 ha).

Great Britain

The oldest municipal building in Britain is the Exeter Guildhall first referred to in a deed of 1160. The Tudor front was added in 1593.

EXHIBITION CENTRES

Largest Great Britain

Britain's largest exhibition centre is the National Exhibition Centre, Birmingham opened in February 1976. Five halls which inter-connect cover 87 180 m² 938,397 ft² or 21.54 acres with a volume of 1 168 466 m³ or 41.26 million ft³.

INDUSTRIAL STRUCTURES

Tallest chimneys World

The world's tallest chimney is the \$5.5 million International Nickel Company's stack 1245 ft 8 in 379.6 m tall at Copper Cliff, Sudbury, Ontario, Canada, completed in 1970. It was built by Canadian Kellogg Ltd., in 60 days and the diameter tapers from 116.4 ft 35.4 m at the base to 51.8 ft 15.8 m at the top. It weighs 38,390 tons 39 006 tonnes and became operational in 1971. The world's most massive chimney is one of 1148 ft 350 m at Puentes, Spain, built by M. W. Kellogg Co. It contains 20,600 yd³ 15 750 m³ of concrete and 2.9 million lb 1315 tonnes of steel and has an internal volume of 6.7 million ft³ 189 720 m³. Europe's tallest chimney serves the Zasavje thermo-power plant in Trboulje, Yugoslavia completed to 350 metres 1181 ft on 1 June 1976.

Great Britain

The tallest chimney in Great Britain is one of 850 ft 259 m at Drax Power Station, North Yorkshire, begun in 1966 and topped out on 16 May 1969. It has an untapered diameter of 87 ft 9 in 26 m and has the greatest capacity of any chimney. The architects were Clifford Tee & Gale of London. The oldest known industrial chimney in Britain is the Stone Edge Chimney, near Chesterfield, Derbyshire built to a height of 55 ft 16.76 m ante 1771.

Cooling towers

The largest cooling tower in the world is that adjacent to the nuclear power plant at Uentrop, W. Germany which is 590 ft 179.8 m tall. It was completed in 1976. The largest in the United Kingdom of the Ferrybridge and Didcot type measure 375 ft 114 m tall and 300 ft 91 m across the base.

HANGARS

Largest World

The world's largest hangar is the Goodyear Airship hangar at Akron, Ohio, USA which measures 1175 ft 358 m long, 325 ft 99 m wide and 200 ft 61 m high. It covers 364,000 ft² (8.35 acres 3.38 ha) and has a capacity of 55,000,000 ft³ 1.6 million m³. The world's largest single fixed-wing aircraft hangar is the Lockheed-Georgia engineering test centre at Marietta, Georgia measuring 630 ft by 480 ft 192 by 146 m (6.94 acres 2.8 ha) completed in 1967. The maintenance hangar at Frankfurt/Main Airport, W. Germany has a slightly lesser area but a frontage of 902 ft 275 m. The cable supported roof has a span of 130 m 426.5 ft. Delta Air Lines' jet base on a 140 acre 56.6 ha site at Hartsfield International Airport, Atlanta, Georgia, has 36 acres 14.5 ha under roof.

Great Britain

The largest hangar building in the United Kingdom is the

Britannia Assembly Hall at the former Bristol Aeroplane Company's works at Filton, Avon, now part of British Aerospace. The overall width of the Hall is 1054 ft 321 m and the overall depth of the centre bay is 420 ft 128 m. It encloses a floor area of 7½ acres 3.0 ha. The cubic capacity of the Hall is 33,000,000 ft³ 934 000 m³. The building was begun in April 1946 and completed by September 1949.

GARAGES

Largest World

The world's largest parking garage is at O'Hare Airport, Chicago with 6 levels and a capacity for 9250 cars. It is operated by Allright Auto Parks Inc, the world's largest parking company.

Great Britain

Great Britain's highest capacity underground car park is that under the Victoria Centre, Nottingham with a capacity of 1650 cars, opened in June 1972.

Private

The largest private garage ever built was one for 100 cars at the Long Island, New York mansion of William Kissam Vanderbilt (1849-1920).

Parking lot

The parking lots at Giants Stadium, East Rutherford, New Jersey have a capacity for 26,000 automobiles and 500 buses. The largest parking area in Great Britain is that for 15,000 cars and 200 coaches at the National Exhibition Centre, Birmingham (see p. 117).

Filling stations

The highest in the world is at Leh, Ladakh, India at 3658 m 12,001 ft operated by Indiaoil. The largest filling station of the 36,000 in the United Kingdom is the Esso service area on the M4 at Leigh Delamere, Wiltshire, opened on 3 Jan 1972. It has 48 petrol and diesel pumps and extends over 43 acres 17.4 ha.

GLASSHOUSE

Largest Great Britain

The largest glasshouse in the United Kingdom is one covering 22.5 acres 9.10 ha owned by Van Heyningen Bros. at Waterham, Herne Bay, Kent completed in October 1982. The crop of 160,000 tomato plants is under 1155 tons of glass.

GRAIN ELEVATOR

Largest

The world's largest single-unit grain elevator is that operated by the C-G-F-Grain Company at Wichita, Kansas, USA. Consisting of a triple row of storage tanks, 123 on each side of the central loading tower or 'head house', the unit is 2,717 ft 828 m long and 100 ft 30 m wide. Each tank is 120 ft 37 m high, with an inside diameter of 30 ft 9 m giving a total storage capacity of 20,000,000 bushels 7.3 million hl of wheat. The largest collection of elevators in the world are the 23 at City of Thunder Bay, Ontario, Canada, on Lake Superior with a total capacity of 103.9 million bushels 37.4 million hl.

SEWAGE WORKS

Largest World

The largest single full treatment sewage works in the world is the West-Southwest Treatment Plant, opened in 1940 on a site of 501 acres 203 ha in Chicago, Illinois, USA. It serves an area containing 2,940,000 people. It treated an average of 835,000,000 US gal 3160 million litres of wastes per day in 1973. The capacity of its sedimentation and aeration tanks is 1 280 000 m³ 1.6 million yd³.

Great Britain

The largest full treatment works in Britain and probably in Europe is the GLC Beckton Works which serves a 2,966,000 population and handles a daily flow of 207 million gal 941 million litres in a tank capacity of 757,000 ft³ 21 400 m³.

WOODEN BUILDING

Largest

The world's largest buildings in timber are the two US Navy airship hangers built in 1942-3 at Tillamook, Oregon. Now used by the Louisiana-Pacific Corporation as a saw mill they measure

A PROGRESSIVE RECORD OF THE WORLD'S TALLEST STRUCTURES

Height in ft	m	Structure	Location	Material	Building or Completion Dates
204	62	Djoser step pyramid (earliest Pyramid)	Saqqāra, Egypt	Tura limestone casing	c. 2650 BC
294	89	Pyramid of Meidum	Meidum, Egypt	Tura limestone casing	c. 2600 BC
c. 336	102	Snefru Bent pyramid	Dahshur, Egypt	Tura limestone casing	c. 2600 BC
342	104	Snefru North Stone pyramid	Dahshur, Egypt	Tura limestone casing	c. 2600 BC
480.9 ¹	146.5	Great Pyramid of Cheops (Khufu)	El Gizeh, Egypt	Tura limestone casing	c. 2580 BC
525 ²	160	Lincoln Cathedral, Central Tower	Lincoln, England	lead sheathed wood	c. 1307-1548
489 ³	149	St Paul's Cathedral spire	City of London, England	lead sheathed wood	1315-1561
465	141	Minster of Notre Dame	Strasbourg, France	Vosges sandstone	1420-1439
502 ⁴	153	St Pierre de Beauvais spire	Beauvais, France	lead sheathed wood	-1568
475	144	St Nicholas Church	Hamburg, Germany	stone and iron	1846-1847
485	147	Rouen Cathedral spire	Rouen, France	cast iron	1823-1876
513	156	Köln Cathedral spires	Cologne, W. Germany	stone	-1880
555 ⁵	169	Washington Monument	Washington, DC, USA	stone	1848-1884
985.9 ⁶	300.5	Eiffel Tower	Paris, France	iron	1887-1889
1046	318	Chrysler Building	New York City, USA	steel and concrete	1929-1930
1250 ⁷	381	Empire State Building	New York City, USA	steel and concrete	1929-1930
1572	479	KWTV Television Mast	Oklahoma City, USA	steel	Nov 1954
1610 ⁸	490	KSWO Television Mast	Roswell, New Mexico, USA	steel	Dec 1956
1619	493	WGAM Television Mast	Portland, Maine, USA	steel	Sept 1959
1676	510	KFVS Television Mast	Cape Girardeau, Missouri, USA	steel	June 1960
1749	533	WTVM & WRBL Television Mast	Columbus, Georgia, USA	steel	May 1962
1749	533	WBIR-TV Mast	Knoxville, Tennessee, USA	steel	Sept 1963
2063	628	KTHI-TV Mast	Fargo, North Dakota, USA	steel	Nov 1963
2120.6	646.38	Warszawa Radio Mast	Plock, Poland	galvanised steel	22 July 1974

¹ Original height. With loss of pyramidion (topmost stone) height now 449 ft 6 in 137 m

² Fell in a storm.

³ Struck by lightning and destroyed 4 June 1561.

⁴ Fell April 1573, shortly after completion.

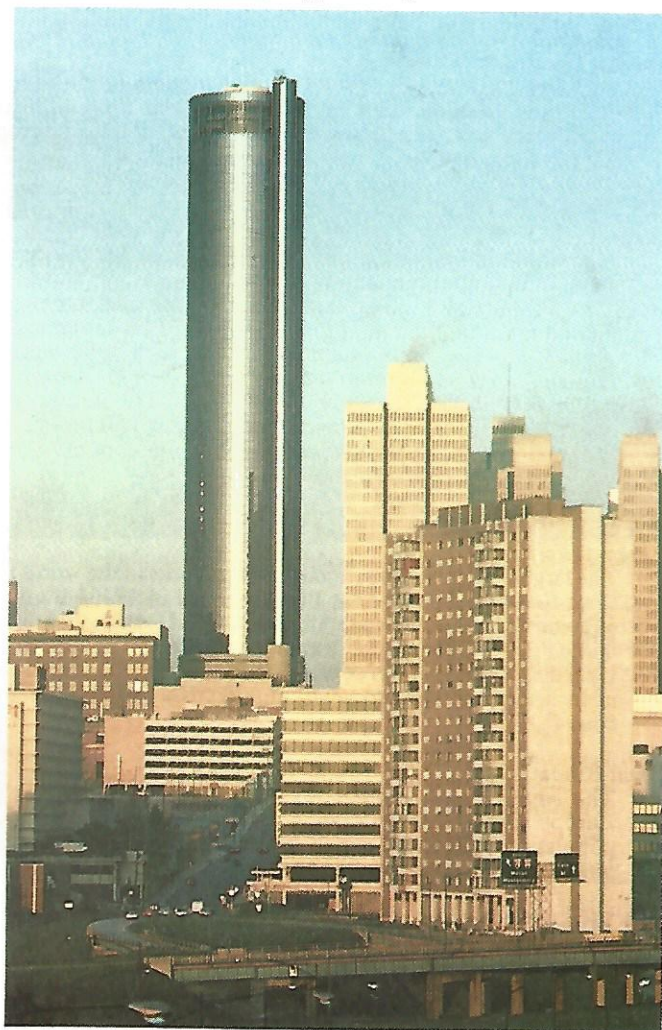
⁵ Sinking at a rate of 0.0047 ft per annum or 5 in 12.7 cm since 1884.

⁶ Original height. With addition of TV antenna in 1957, now 1052 ft 320.75 m.

⁷ Original height. With addition of TV tower on 1 May 1951 now 1427 ft 449 m. Exterior is clad in limestone from the Empire Quarry, Indiana.

⁸ Fell in gale in 1960.

The cylindrical Peachtree Center Plaza in Atlanta, Georgia, USA, the tallest hotel in the world (see pp. 119-20).



PROGRESSIVE LIST OF HIGHEST STRUCTURES IN GREAT BRITAIN

Feet	Metres	Structure	
404	123	Salisbury Cathedral Spire	c. 1305-
525	160	Lincoln Cathedral	1307-1548
489	149	St Paul's Cathedral, London	1315-1561
518.7	158.1	Blackpool Tower, Lancashire	1894
562	171.29	New Brighton Tower, Merseyside	1900-1919
820	250	GPO Radio Masts, Rugby	1925-
1000*	304.8	ITA Mast, Mendlesham, Suffolk	July 1959
1265	385	IBA Mast, Emley Moor, Yorkshire	1965-1969†
1265	385	IBA Mast, Belmont	1965-
1272	387.1	IBA Mast, Belmont	Sept. 1967

* ITA masts of the same height followed at Lichfield, Staffordshire; Black Hill, Strathclyde; Caldbeck, Cumbria; and Durris, Grampian.

† Severely damaged by icing and replaced.

1000 ft long, 170 ft high at the crown and 296 ft wide at the base (304.8 m × 51.81 m × 90.22 m) and are worth \$6 million (now £2.7 million).

AIR-SUPPORTED BUILDING

Largest

The world's largest air-supported roof is the roof of the 80,600 capacity octagonal Pontiac Silverdome Stadium, Michigan, USA measuring 522 ft 159 m in width and 722 ft 220 m in length. The air pressure is 5 lb/in² 34.4 kPa supporting the 10 acre 4 ha translucent 'Fibreglas' roofing. The structural engineers were Geiger-Berger Associates of New York City. The largest standard size air hall is one 860 ft 262 m long, 140 ft 42.6 m wide and 65 ft 19.8 m high, at Lima, Ohio, USA, made by Irvin Industries of Stamford, Connecticut, USA.

2. BUILDINGS FOR LIVING

WOODEN BUILDINGS

Oldest

The oldest extant wooden buildings in the world are those comprising the Pagoda, Chumanar gate and the Temple of Horyu (Horyu-ji), at Nara, Japan, dating from c. AD 670 and completed

in 715. The nearby Dalbremsuden, built in 1704–11, once measured 285.4 ft long, 167.3 ft wide and 153.3 ft tall 87 × 51 × 46.25 m. The present dimensions are 188 × 165.3 × 159.4 ft 57.3 × 50.4 × 48.6 m.

CASTLES

Earliest World

Fortifications existed in all the great early civilisations, including that of ancient Egypt from 3000 BC. Fortified castles in the more accepted sense only existed much later. The oldest in the world is that at Gomdan, in the Yemen, which originally had 20 storeys and dates from before AD 100.

Great Britain

The oldest stone castle extant in Great Britain is Richmond Castle, Yorkshire, built in c. 1075. Iron Age relics from the first century BC or AD have been found in the lower levels of the Dover Castle site.

Ireland

The oldest Irish castle is Ferrycarrig near Wexford dating from c. 1180. The oldest castle in Northern Ireland is Carrickfergus Castle, County Antrim, Northern Ireland, which dates from before 1210.

Largest World, UK and Ireland

The largest inhabited castle in the world is the Royal residence of Windsor Castle at New Windsor, Berkshire. It is primarily of 12th century construction and is in the form of a waisted parallelogram 1890 ft by 540 ft 576 by 164 m. The total area of Dover Castle however covers 34 acres 13.75 ha with a width of 1100 ft 335.2 m and a curtain wall of 1800 ft 550 m or if underground works are taken in, 2300 ft 700 m. The overall dimensions of Carisbrooke Castle (450 ft by 360 ft 110 by 137 m), Isle of Wight, if its earthworks are included, are 1350 ft by 825 ft 411 m by 251 m. The largest castle in Scotland is Edinburgh Castle with a major axis of 1320 ft 402 m and measuring 3360 ft 1025 m along its perimeter wall including the Esplanade. The most capacious of all Irish castles is Carrickfergus (see above) but that with the most extensive fortifications is Trim Castle, County Meath, built in c. 1205 with a curtain wall 1455 ft 443 m long.

Forts Largest

The largest ancient castle in the world is Hradčany Castle, Prague, Czechoslovakia originating in the 9th century. It is a very oblong irregular polygon with an axis of 570 m 1870 ft and an average traverse diameter of 128 m 420 ft with a surface area of 7.28 hectares 18 acres. Fort George, Ardersier, Scotland built in 1748–69 measures 2100 ft 640 m in length and has an average width of 620 ft 189 m. The total site covers 42½ acres 17.2 ha.

Thickest walls

The walls of Babylon north of Al Hillah, Iraq, built in 600 BC, were up to 85 ft 26 m in thickness. The walls of the Great Tower or Donjon of Flint Castle, built in 1277–80 are 23 ft 7.01 m thick. The largest Norman keep in Britain is that of Colchester Castle measuring 152½ ft 46 m by 111½ ft 34 m.

PALACES

Largest World

The largest palace in the world is the Imperial Palace (*Gu gong*) in the centre of Peking (*Bei jing*, the northern capital), China, which covers a rectangle 1050 yd by 820 yd 960 by 750 m, an area of 177.9 acres 72 ha. The outline survives from the construction of the third Ming Emperor, Yung lo of 1402–24, but due to constant re-arrangements most of the intra-mural buildings are 18th century. These consist of 5 halls and 17 palaces of which the last occupied by the last Empress was the Palace of Accumulated Elegance (*Chu xia gong*) until 1924.

Residential

The largest residential palace in the world is the Vatican Palace, in the Vatican City, an enclave in Rome, Italy. Covering an area of 13½ acres 5.5 ha it has 1400 rooms, chapels and halls, of which the oldest date from the 15th century.

Great Britain

The largest palace in the United Kingdom in Royal use is Buckingham Palace, London, so named after its site, bought in 1703

by John Sheffield, the 1st Duke of Buckingham and Normanby (1648–1721). Buckingham House was reconstructed in the Palladian style between 1835 and 1836, following the design of John Nash (1752–1835). The 610 ft 186 m long East Front was built in 1846 and refaced in 1912. The Palace, which stands in 39 acres 15.8 ha of garden, has 600 rooms including a ballroom 111 ft 34 m long.

The largest ever Royal palace has been Hampton Court Palace, Greater London, acquired by Henry VIII from Cardinal Wolsey in 1525 and greatly enlarged by the King and later by William III, Anne and George I, whose son George II was its last resident monarch. It covers 4 acres 1.6 ha of a 669 acre 270.7 ha site.

Largest moat

The world's largest moats are those which surround the Imperial Palace in Peking (see above). From plans drawn by French sources it appears to measure 54 yd 49 m wide and have a total length of 3600 yd 3290 m. The city's moats total in all 23½ miles 38 km.

FLATS

Largest

The largest blocks of private flats in Britain are the Barbican Estate, London, EC2 with 2011 flats on a 40 acre 16 ha site with covered parking space for 2000 cars. The architects were Chamberlain, Powell and Bon.

Tallest World

The tallest block of flats in the world are Lake Point Towers of 70 storeys, and 645 ft 197 m in Chicago, Illinois, USA.

Great Britain

The tallest residential block in Great Britain is the Shakespeare Tower in the Barbican in the City of London, which has 116 flats on 44 storeys and rises to a height of 419 ft 2½ in 127.77 m above the street. The first of the three Barbican towers was 'topped out' in May 1971.

HOTELS

Largest World

The hotel with most rooms in the world is the 12 storey Hotel Rossiya in Moscow, USSR, with 3200 rooms providing accommodation for 6,000 guests, opened in 1967. It would thus require more than 8½ years to spend one night in each room. In addition there is a 21 storey 'Presidential' tower in the central courtyard. The hotel employs about 3000 people, and has 93 lifts. The ballroom is reputed to be the world's largest. Muscovites are not permitted as residents while foreigners are charged 16 times more than the very low rate charged to USSR officials. The Izmailovo Hotel complex, opened in July 1980 for the XXIIInd Olympic Games in Moscow, was designed to accommodate 9500 people.

The largest commercial hotel building in the world is The Waldorf Astoria, on Park Avenue, New York City, NY, USA. It occupies a complete block of 81,337 ft² (1.87 acres 0.75 ha) and reaches a maximum height of 625 ft 7 in 191 m. The Waldorf Astoria has 47 storeys and 1852 guests rooms and maintains the largest hotel radio receiving system in the world. The Waldorf can accommodate 10,000 people at one time and has a staff of 1700. The restaurants have catered for parties up to 6000 at a time. The coffee-maker's daily output reaches 1000 US gal 3785 litres. The electricity bill is \$2,000,000 each year. The hotel has housed 6 Heads of States simultaneously. It was opened on 1 Oct 1931.

Great Britain

The greatest sleeping capacity of any hotel in Great Britain is 1859 in the London Penta Hotel, Cromwell Road, London SW7 with a staff of 419. It was opened in 1973. The Regent Palace Hotel, Piccadilly Circus, London, opened 20 May 1915, has however 225 more rooms totalling 1140. The largest hotel is the Grosvenor House Hotel, Park Lane, London, which was opened in 1929. It is of 8 storeys covering 2½ acres 1 ha and caters for more than 100,000 visitors per year in 470 rooms. The Great Room is the largest hotel room measuring 181 ft by 131 ft 55 by 40 m with a height of 23 ft 7 m. Banquets for 1500 are frequently handled.

Tallest

The tallest hotel in the world, measured from the street level of its main entrance to the top, is the 723 ft 220,3 m tall 70 storey Peachtree Center Plaza, Atlanta, Georgia, USA. The \$50 million 1100 room hotel is operated by Western International Hotels and owned by Portman Properties. Their Detroit Plaza measuring from the rear entrance level is however 748 ft 227,9 m tall. Britain's tallest hotel is the 27 storey 380 ft 132,24 m tall London Penta Hotel (see above).

The ground was broken in June 1980 for the building of the £100 million Raffles City project in Singapore. The central tower of 71 storeys will be 230 metres 754 ft 7 ins tall.

Largest Lobby

The world's largest hotel lobby is that of The Grand Hotel, Taipei, Taiwan completed on 10 Oct 1973. It measures 47 × 35 m 154 × 114 ft and is 9,6 m 31½ ft high.

Most expensive

The world's costliest hotel accommodation is the Royal Suite in the Nova Park Elysées, Rue Françoise, Paris at £3900 per day. This compares with the official New York City Presidential Suite in The Waldorf Astoria at \$2000 (now £1110) a day.

The most expensive hotel suite in Britain is the Royal Suite on the 8th floor of the Hotel Inter-Continental, London W1, with 3 bedrooms at £528 (incl. VAT) (May 1982).

Spas

The largest spa in the world measured by number of available hotel rooms is Vichy, Allier, France, with 14,000 rooms. Spas are named after the watering place in the Liège province of Belgium where hydrotherapy was developed from 1626. The highest French spa is Barèges, Hautes-Pyrénées, at 4068 ft 1240 m above sea level.

HOUSING**Largest estate**

The largest housing estate in the United Kingdom is the 1670-acre 675 ha Becontree Estate, on a site of 3000 acres 1214 ha in Barking and Redbridge, Greater London, built between 1921 and 1929. The total number of homes is 26,822, with an estimated population of nearly 90,000.

New towns

Of the 23 new towns being built in Great Britain that with the largest eventual planned population is Milton Keynes, Buckinghamshire, with a projected 250,000 for 1992.

Largest house World

The largest private house in the world is the 250-room Biltmore House in Asheville, North Carolina, USA. It is owned by George and William Cecil, grandsons of George Washington Vanderbilt II (1862–1914). The house was built between 1890 and 1895 in an estate of 119,000 acres 48 160 ha, at a cost of \$4,100,000 (now £1,708,333) and now valued at \$55,000,000 with 12,000 acres 4856 ha. The most expensive private house ever built is The Hearst Ranch at San Simeon, California, USA. It was built in 1922–39 for William Randolph Hearst (1863–1951), at a total cost of more than \$30,000,000 (then £6,120,000). It has more than 100 rooms, a 104 ft 32 m long heated swimming pool, an 83 ft 25 m long assembly hall and a garage for 25 limousines. The house required 60 servants to maintain it.

Great Britain

The largest house in Great Britain was Wentworth Woodhouse, near Rotherham, South Yorkshire, formerly the seat of the Earls Fitzwilliam and now a teachers' training college. The main part of the house, built over 300 years ago, has more than 240 rooms with over 1000 windows, and its principle façade is 600 ft 183 m long. The Royal residence, Sandringham House, Norfolk, has been reported to have had 365 rooms before the demolition of 73 surplus rooms in 1975. The largest house in Ireland is Castle-town in County Kildare, owned by the Hon. Desmond Guinness and is the headquarters of the Irish Georgian Society. Scotland's largest house is Hopetoun House, West Lothian, built between 1696 and 1756 with a west façade 675 ft 206 m long.

Smallest

The smallest house in Britain is the 19th century fisherman's cottage on Conway Quay, Gwynedd. It has a 72 in 182 cm frontage, is 122 in 309 cm high and has two tiny rooms and a staircase. The house with the narrowest known frontage is the 58 inches 1,47 m of 21, Manor Road, Kingston, Portsmouth. It was built over a footpath.

Ex Jutland naval veteran Alexander Wortley (1900–80) lived his last 20 years in a green painted box in the garden of David Moreau in Langley Park, Buckinghamshire. It measured 5 × 4 × 3 feet with an extension for his feet—small enough to keep women out. He paid no rent, rates or taxes and did not believe in insurance, pensions or governments.

Most expensive Houses

The highest asking price for any private house is \$16.5 million (then £7.1 million) in July 1980 for the late Conrad Hilton's (1888–1979) Casa Encantada built in 1938 in an 8½ acre 3,43 ha estate in Bel-Air, Los Angeles, California, USA. It has 64 rooms and 26 bathrooms and 23,000 ft² 2136 m² of living space. The Hilton attorney reportedly discouraged viewing by anyone less than a demi-centi-millionaire. The most expensive house in Britain is the 14 bedroom Tudor mansion Sutton Place, Guildford, Surrey with 160 acres of garden and 4 tenanted farms sold in 1980 by Lintott Residential to Mr Stanley Seager for £7,750,000.

Penthouse

The world's most expensive penthouse is the four storey Galleria International penthouse on 57th Street between Park and Lexington Avenue, Manhattan, New York City with 4 main bedrooms, a 22 ft swimming pool, a library, a sauna and several solariums. It was on the market in March 1976 for £1,750,000.

Oldest

The oldest house in Britain is Eastry Court near Sandwich, Kent dating from AD 603. Some of the original timbers and stone infill still survives behind its present Georgian façade.

Stately home most visited

The most visited stately home, for which precise figures are published in the United Kingdom, is Beaulieu, Hampshire, owned by Lord Montagu of Beaulieu with 555,000 visitors (1981). The figures for Woburn Abbey, Bedfordshire, owned by the Duke of Bedford, have not been published since 1963 but the annual attendance including that of the Woburn Wild Animal Kingdom exceeds 1,000,000.

Barracks

The oldest purpose built barracks in the world are believed to be Collins Barracks, formerly the Royal Barracks, Dublin, Ireland, completed in 1704 and still in use.

3. BUILDINGS FOR ENTERTAINMENT

STADIUM**Largest World**

The world's largest stadium is the Strahov Stadium in Praha (Prague), Czechoslovakia. It was completed in 1934 and can accommodate 240,000 spectators for mass displays of up to 40,000 Sokol gymnasts.

Football

The largest football stadium in the world is the Maracana Municipal Stadium in Rio de Janeiro, Brazil, where the football ground has a normal capacity of 205,000, of whom 155,000 may be seated. A crowd of 199,854 was accommodated for the World Cup final between Brazil and Uruguay on 16 July 1950. A dry moat, 7 ft 2,13 m wide and more than 5 ft 1,5 m deep, protects players from spectators and vice versa. Britain's most capacious football stadium is Hampden Park, Glasgow opened on 31 Oct 1903 and once surveyed to accommodate 184,000 compared with an attendance of 149,547 on 17 Apr 1937 and the present licensed limit of 135,000.

General

The Azteca Stadium, Mexico City, Mexico, opened in 1968, has a capacity of 107,000 of whom nearly all are under cover. The largest covered stadium in Britain is the Empire Stadium Wembley, Brent, Greater London, opened in April 1923. It was the scene of the 1948 Olympic Games and the final of the 1966 World Cup. In 1962-3 the capacity under cover was increased to 100,000 of whom 45,000 may be seated. The original cost was £1,250,000.

Largest roof

The transparent acryl glass 'tent' roof over the Munich Olympic Stadium, W. Germany measures 914,940 ft² (21.0 acres 8.5 ha) in area resting on a steel net supported by masts. The roof of longest span in the world is the 680 ft 207.2 m diameter of the Louisiana Superdome (see below). The major axis of the elliptical Texas Stadium completed in 1971 at Irving, Texas is however 240 m 787 ft 4 in.

Indoor

The world's largest indoor stadium is the 13 acre 5.26 ha \$173 million (then £75 million) 273 ft 83.2 m tall Superdome in New Orleans, Louisiana completed in May 1975. Its maximum seating capacity for conventions is 97,365 or 76,791 for football. Box suites rent for \$35,000 excluding the price of admission. A gondola with six 312 in 7.92 m TV screens produces instant replay.

Ballroom

The dance floor used for championships at Earl's Court Exhibition Hall, Kensington, London extends 256 ft 78 m in length.

Amusement resort

The world's largest amusement resort is Disney World in 27,443 acres 11 105 ha of Orange and Osceola counties, 20 miles 32 km south of west of Orlando in central Florida. It was opened on 1 Oct 1971. This \$400 million investment attracted 10,700,000 visitors in its first year. The most attended resort in the world is Disneyland, Anaheim, California (opened 1955) where the total number of visitors reached 213,840,692 on 27 Apr 1982. The greatest attendance in a day was 82,516 on 16 Aug 1969.

Holiday camps

The largest holiday camp in Britain is that at Filey, North Yorkshire owned by Butlins Ltd. It extends over 500 acres 200 ha and can house 10,600 residents.

Largest pleasure beach

The largest pleasure beach in the world is Virginia Beach, Virginia, USA. It has 28 miles 45 km of beach front on the Atlantic and 10 miles 16 km of estuary frontage. The area embraces 255 miles² 660 km² and 134 hotels and motels.

Piers Earliest longest and most

The Old Pier at Weymouth, Dorset dates back to 1812. The longest pleasure pier in the world is Southend Pier at Southend-on-Sea in Essex. It is 1.34 miles 2.15 km in length. It was first opened in August 1889 with final extensions made in 1929. In 1949-50 the pier had 5,750,000 visitors. The pier railway was closed in October 1978.

The resort with most piers is Atlantic City, New Jersey, USA with 6 pre-war and 5 currently. In Britain only Blackpool has three—North, Central and South.

Earliest fair

The earliest major international fair was the Great Exhibition of 1851 in the Crystal Palace, Hyde Park, City of Westminster, Greater London which in 141 days attracted 6,039,195 admissions.

Largest fair

The largest ever International Fair site was that for the St Louis, Missouri, Louisiana Purchase Exposition which covered 1271.76 acres 514.66 ha. It also staged the 1904 Olympic Games and drew an attendance of 19,694,855.

Record fair attendance

The record attendance for any fair was 64,218,770 for Expo 70

held on an 815 acre 330 ha site at Osaka, Japan from March to 13 Sept 1970. It made a profit of 19,439,402,017 yen (then £22.6 million).

Big wheel

The original Ferris Wheel, named after its constructor, George W. Ferris (1859-96), was erected in 1893 at the Midway, Chicago, Illinois, at a cost of \$385,000 (then £79,218). It was 250 ft 76 m in diameter, 790 ft 240 m in circumference, weighed 1070 tons 1087 tonnes and carried 36 cars each seating 60 people, making a total of 2160 passengers. The structure was removed in 1904 to St Louis, Missouri, and was eventually sold as scrap for \$1800 (then £370). In 1897 a Ferris Wheel with a diameter of 300 ft 91 m was erected for the Earl's Court Exhibition, London. It had ten 1st-class and 30 2nd-class cars. The largest wheel now operating is at Kobe Portopia Land, Kobe, Japan, with a height of 63.5 m 208 ft 4 in. It was constructed by Hankyu Railway Corporation of Osaka, Japan and completed in March 1981.

Fastest and Longest switchbacks

The maximum speeds claimed for switchbacks, scenic railways or roller coasters have in the past been exaggerated for commercial reasons. The twin track triple helix American Eagle at Marriott's Great America, Gurnee, Illinois opened on 23 May 1981 has a vertical drop of 147.4 ft 44.92 m on which a speed of 66.31 mph 106.73 km/h is reached. The longest roller coaster in the world is *The Beast* at Kings Island near Cincinnati, Ohio, USA. Scientific tests at the base of its 141 ft 42.98 m high drop returned a speed of 64.77 mph 104.23 km/h on 5 Apr 1980. The run of 7400 ft or 1.40 miles 2.25 km incorporates 800 ft 243.8 m of tunnels and a 540 degree banked helix. The tallest is the Tojoko Land Loop Coaster in Hyogo, Japan opened on 4 Aug 1979. It is 193 ft 5 in 59.96 m tall.

Longest slide

The longest slide in the world is at the Bromley Alpine Slide on Route 11 in Peru, Vermont, USA. This has a length of 4600 ft 1402 m (0.87 mile) and a vertical drop of 820 ft 250 m.

Restaurant Highest

The highest restaurant in the world is at the Chacaltaya ski resort, Bolivia at 5340 m 17,519 ft. The highest in Great Britain is the Ptarmigan Observation Restaurant at 3650 ft 1112 m above sea-level on Cairngorm (4084 ft 1244 m) near Aviemore, Highland, Scotland.

Night club Oldest

The earliest night club (*boite de nuit*) was 'Le Bal des Anglais' at 6 Rue des Anglais, Paris, 5e France. It was founded in 1843 but closed c. 1960.

Largest

The largest night club in the world is Gilley's Club (formerly Shelly's) built in 1955 and extended in 1971 on Spencer Highway, Houston, Texas, USA with a seating capacity of 6000 under one roof covering 4 acres 1.6 ha. In the more classical sense the largest night club in the world is 'The Mikado' in the Akasaka district of Tokyo, Japan, with a seating capacity of 2000. It is 'manned' by 1250 hostesses. A binocular is essential to an appreciation of the floor show.

Lowest

The lowest night club is the 'Minus 206' in Tiberias, Israel on the shores of the Sea of Galilee. It is 206 m 676 ft below sea-level. An alternative candidate is 'Outer Limits', opposite the Cow Palace, San Francisco, California which was raided for the 151st time on 1 Aug 1971. It has been called 'The Most Busted Joint' and 'The Slowest to Get the Message'.

PUBLIC HOUSES

Oldest

There are various claimants to the title of the United Kingdom's oldest inn. A foremost claimant is 'The Fighting Cocks', St Albans, Hertfordshire (an 11th century structure on an 8th century site). The timber frame of The Royalist Hotel, Digbeth Street, Stow-on-the-Wold, Gloucestershire has been dated to 1000 years before the present. It was the inn 'The Eagle and the Child' in the 13th century and known to exist in AD 947. An

origin as early as an 860 has been claimed for 'Ye Olde Ferry Boat Inn' at Holywell, Cambridgeshire. There is some evidence that it antedates the local church, built in 980, but the earliest documents are not dated earlier than 1100. There is evidence that the 'Bingley Arms', Bardsey, near Leeds, West Yorkshire, restored and extended in 1738, existed as the 'Priest's Inn' according to Bardsey Church records dated 905.

The oldest pub in Ireland is 'The Brazen Head', Bridge Street, Dublin licensed in 1666 and re-built in 1668. The fact that this former den of iniquity does not sell Draught Guinness is evidence of its antiquity.

Largest World

The largest beer-selling establishment in the world is the Mathäser, Bayerstrasse 5, München (Munich), West Germany, where the daily sale reaches 84,470 pts 48 000 litres. It was established in 1829, was demolished in World War II and re-built by 1955 and now seats 5500 people. The through-put at the Dube beer halls in the Bantu township of Soweto, Johannesburg, South Africa may, however, be higher on some Saturdays when the average consumption of 6000 gal (48,000 pts 27 280 litres) is far exceeded.

Great Britain

The largest public house in Great Britain is 'The Swan' at Yardley, West Midlands. It has eight bars with a total drinking area of 13,852 ft² 1287 m² with 58 taps and 2 miles 3.2 km of piping. The sale of beer is equivalent to 31,000 bottles per week. The pub can hold well over 1000 customers and 320 for banqueting. The permanent staff totals 60 with seven resident. 'The Swan' is owned by Allied Breweries and administered by Ansells Limited.

Smallest

The smallest pub in Great Britain is the 17th century 'The Nutshell', Bury St Edmunds, Suffolk with maximum dimensions of 15 ft 10 in by 7 ft 6 in 4.82 x 2.28 m or 118.74 ft² 11.03 m². The bar room in the Earl Grey, Quenington, Gloucestershire measures 116.37 ft² 10.81 m².

Longest bars World

The longest permanent bar with beer pumps is that built in 1938 at the Working Men's Club, Mildura, Victoria, Australia. It has a counter 298 ft 90.8 m in length, served by 27 pumps. Temporary bars have been erected of greater length. The Falstaff Brewing Corp. put up a temporary bar 336 ft 5 in 102 m in length on Wharf St, St Louis, Missouri, USA, on 22 June 1970. The Bar at Erickson's on Burnside Street, Portland, Oregon, in its heyday (1883-1920) possessed a bar which ran continuously around and across the main saloon measuring 684 ft 208.48 m. The chief bouncer Edward 'Spider' Johnson had a chief assistant named 'Jumbo' Reilly who weighed 23 stone and was said to resemble 'an ill natured orang-utan'. Beer was 5 cents for 16 fluid ounces.

United Kingdom and Ireland

The longest bar in the United Kingdom with beer pumps is the Long Bar at The Cornwall Coliseum Auditorium at Carlyon Bay, St. Austell, Cornwall measuring 104 ft 4 in 31.8 m and having 34 dispensers (beer and lager). The longest bar in a pub is of 71 ft 11 in 21.92 m with 29 dispensers in 'The Mount Pleasant Inn', Repton, Derbyshire. The Grand Stand Bar at Galway Racecourse, Ireland completed in 1955, measures 210 ft 64 m.

Longest tenure

There are no collated records on licensees but the 'Glan-y-Afon Inn', Milwr near Holywell, North Wales had a 418 year long (1559-1977) run within a family which ended with the retirement of Mrs Mary Evans.

Longest name

The pub with the longest name is the 39 letter 'The Thirteenth Mounted Cheshire Rifleman Inn', at Stalybridge, Greater Manchester, but 'The Green Man and Black's Head Royal Hotel' at Ashbourne, Derbyshire has more words.

Shortest name

The public house in the United Kingdom with the shortest name is the 'X' at Westcott, Cullompton, Devon.

Commonest name

The commonest pub name in Britain is 'Red Lion' of which there are probably just more than 1000. John A. Blackwell of Ferndown, Dorset has recorded over 4600 different pub names.

Highest

The highest public house in the United Kingdom is the 'Tan Hill Inn' in North Yorkshire. It is 1732 ft 528 m above sea-level, on the moorland road between Reeth, North Yorkshire and Brough, Cumbria. The highest pub open the year round is the 'Cat and Fiddle' in Cheshire, near Buxton, Derbyshire at 1690 ft 515 m. The White Lady Restaurant, 2550 ft 777 m up on Cairngorm (4084 ft 1244 m) near Aviemore, Highland, Scotland is the highest licensed restaurant.

Most visits

Stanley House of Totterdown, Bristol has visited 3298 differently named pubs in Britain by way of public transport only to 1 May 1982. Jimmy Young GM BEM, of Better Pubs Ltd claims to have visited 23,338 different pubs.

4. TOWERS AND MASTS

TALLEST STRUCTURES

World

The tallest structure in the world is the guyed Warszawa Radio mast at Konstanytown near Gabin and Płock 60 miles 96 km north-west of the capital of Poland. It is 646.38 m 2120 ft 8 in tall or more than four tenths of a mile. The mast was completed on 18 July 1974 and put into operation on 22 July 1974. It was designed by Jan Polak and weighs 550 tons/tonnes. The mast is so high that anyone falling off the top would reach their terminal velocity and hence cease to be accelerating before hitting the ground. Work was begun in July 1970 on this tubular steel construction, with its 15 steel guy ropes. It recaptured for Europe a record held in the USA since the Chrysler Building surpassed the Eiffel Tower in 1929.

Great Britain

The tallest structure in the United Kingdom is the Independent Broadcasting Authority's mast at Belmont, north of Horncastle, Lincolnshire completed in 1965 to a height of 1265 ft 385 m with 7 ft 2.13 m added by meteorological equipment installed in September 1967. It serves Yorkshire TV and weighs 210 tons.

TALLEST TOWERS

World

The tallest self-supporting tower (as opposed to a guyed mast) in the world is the \$44 million CN Tower in Metro Centre, Toronto, Canada, which rises to 1822 ft 1 in 555.33 m. Excavation began on 12 Feb 1973 for the 130,000 ton structure of reinforced, post-tensioned concrete topped out on 2 Apr 1975. The 416-seat restaurant revolves in the Sky Pod at 1140 ft 347.5 m from which the visibility extends to hills 74½ miles 120 km distant. Lightning strikes the top about 200 times (30 storms) per annum.

The tallest tower built before the era of television masts is the Eiffel Tower, in Paris, France, designed by Alexandre Gustav Eiffel (1832-1923) for the Paris exhibition and completed on 31 Mar 1889. It was 300.51 m 985 ft 11 in tall, now extended by a TV antenna to 320.75 m 1052 ft 4 in and weighs 7340 tonnes 7224 tons. The maximum sway in high winds is 12.7 cm 5 in. The whole iron edifice which has 1792 steps, took 2 years, 2 months and 2 days to build and cost 7,799,401 francs 31 centimes.

Great Britain

The tallest self-supported tower in Great Britain is the 1080 ft 329.18 m tall Independent Broadcasting Authority transmitter at Emley Moor, West Yorkshire, completed in September 1971. The structure, which cost £900,000, has an enclosed room at the 865 ft 263.65 m level and weighs with its foundations more than 15,000 tons/tonnes. The tallest tower of the pre-television era was the New Brighton Tower of 562 ft 171.29 m built on Merseyside in 1897-1900 and dismantled in 1919-21.



The stimulating drop of 141 ft 42.98 m on the world's longest roller coaster, *The Beast*, at King's Island, Cincinnati, Ohio (see p. 121). (Rick Norton/King's Island)

5. BRIDGES

Oldest World

Arch construction was understood by the Sumerians as early as 3200 BC and a reference exists to a Nile bridge in 2650 BC. The oldest surviving datable bridge in the world is the slab stone single arch bridge over the River Meles in Smyrna (now Izmir), Turkey, which dates from c. 850 BC.

Great Britain

The clapper bridges of Dartmoor and Exmoor (e.g. the Tarr Steps over the River Barle, Exmoor, Somerset) are thought to be of prehistoric types although none of the existing examples can be certainly dated. They are made of large slabs of stone placed over boulders. The Romans built stone bridges in England and remains of these have been found at Corbridge (Roman, *Corstopitum*), Northumberland dating to the 2nd century AD; Chester, Northumberland and Willowford, Cumbria. Remains of a very early wooden bridge have been found at Ardwick, Northamptonshire.

LONGEST

Cable suspension World

The world's longest bridge span is the main span of the Humber Estuary Bridge, England at 4626 ft 1410 m. Work began on 27 July 1972, after a decision announced on 22 Jan 1966. The towers are 162.5 m 533 ft 1 5/8 in tall from datum and are 1 3/8 in 36 mm out of parallel, to allow for the curvature of the Earth. Including the Hesse and the Barton side spans, the bridge stretches 2220 m or 1.37 miles. On 22 Mar 1980 an accident occurred with the slinging of the decking. The bridge was structurally completed on 18 July 1980 at a cost of £91 million and was opened by HM the Queen on 17 July 1981. Tolls, ranging between £1 for cars and £7.50 for heavy vehicles, operative from 4 May 1981, are the highest in Britain.

The Mackinac Straits Bridge between Mackinaw City and St Ignace, Michigan, USA, is the longest suspension bridge in the world measured between anchorages (1.58 miles 2543 m) and has an overall length, including viaducts of the bridge proper measured between abutment bearings, of 3.63 miles 5853.79 m.

It was opened in November 1957 (dedicated 28 June 1958) at a cost of \$100 million (then £35,700,000) and has a main span of 3800 ft 1158 m.

The double-deck road-rail Akashi-Kaikyo bridge linking Honshū and Shikoku, Japan is planned to be completed in 1988. The main span will be 5840 ft 1780 m in length with an overall suspended length with side spans totalling 11,680 ft 3560 m. Work began in October 1978 and the eventual cost is expected to exceed 1000 billion (10¹²) yen.

Plans for a Messina Bridge linking Sicily with the Italian mainland are dependent upon EEC budgets. One preliminary study calls for towers 1000 ft 304.8 m tall and a span of 3000 m 9842 ft or 1.86 miles. The total cost, it has been estimated, would however, exceed £2,000 million.

Cantilever World

The Quebec Bridge (Pont de Québec) over the St Lawrence River in Canada has the longest cantilever truss span of any in the world—1800 ft 549 m between the piers and 3239 ft 987 m overall. It carries a railway track and 2 carriageways. Begun in 1899, it was finally opened to traffic on 3 Dec 1917 at a cost of 87 lives, and \$Can.22,500,000 (then £4,623,000).

Great Britain

The longest cantilever bridge in Great Britain is the Forth Bridge. Its two main spans are 1710 ft 521 m long. It carries a double railway track over the Firth of Forth 156 ft 47.5 m above the water level. Work commenced in November 1882 and the first test trains crossed on 22 Jan 1890 after an expenditure of £3 million. It was officially opened on 4 Mar 1890. Of the 4500 workers who built it, 57 were killed in various accidents.

Steel arch World

The longest steel arch bridge in the world is the New River Gorge bridge, near Fayetteville, West Virginia, USA, completed in 1977 with a span of 1700 ft 518.2 m.

Great Britain

The longest steel arch bridge in Great Britain is the Runcorn-Widnes bridge, Cheshire opened on 21 July 1961. It has a span of 1082 ft 329.8 m.

Floating bridge

The longest floating bridge in the world is the Second Lake Washington Bridge, Seattle, Washington State, USA. Its total length is 12,596 ft 3839 m and its floating section measures 7518 ft 2291 m (1.42 miles 2.29 km). It was built at a total cost of \$15,000,000 (then £5,357,000) and completed in August 1963.

Covered bridge

The longest covered bridge in the world is that at Hartland, New Brunswick, Canada measuring 1282 ft 390.8 m overall, completed in 1899.

Railway bridge

The longest railway bridge in the world is the Huey P. Long Bridge, Metairie, Louisiana, USA with a railway section 22,996 ft 7009 m (4.35 miles 7 km) long. It was completed on 16 Dec 1935 with a longest span of 790 ft 241 m. The Yangtze River Bridge, completed in 1968 in Nanking, China is the world's longest combined highway and railway bridge. The rail deck is 6772 m 4.20 miles and the road deck is 4589 m 2.85 miles.

Great Britain

The longest railway bridge in Britain is the second Tay Bridge (11,653 ft 3552 m), Tayside, Scotland opened on 20 June 1887. Of the 85 spans, 74 (length 10,289 ft 3136 m) are over the waterway. The 878 brick arches of the London Bridge to Deptford Creek viaduct built in 1836 extend for 3¼ miles 6.0 km.

Longest bridging

The world's longest bridging is the Second Lake Pontchartrain Causeway, completed on 23 Mar 1969, joining Lewisburg and Metairie, Louisiana, USA. It has a length of 126,055 ft 38 422 m (23.87 miles). It cost \$29,900,000 (then £12.45 million) and is 228 ft 69 m longer than the adjoining First Causeway completed in 1956. The longest railway viaduct in the world is the rock-filled Great Salt Lake Railroad Trestle, carrying the Southern Pacific Railroad 11.85 miles 19 km across the Great Salt Lake, Utah, USA. It was opened as a pile and trestle bridge on 8 Mar 1904, but converted to rock fill in 1955–60.

The longest stone arch bridging in the world is the 3810 ft 1161 m long Rockville Bridge north of Harrisburg, Pennsylvania, USA, with 48 spans containing 196,000 tons/tonnes of stone and completed in 1901.

Widest bridge

The world's widest long-span bridge is the 1650 ft 502.9 m span Sydney Harbour Bridge, Australia (160 ft 48 m wide). It carries two electric overhead railway tracks, 8 lanes of roadway and a cycle and footway. It was officially opened on 19 Mar 1932. The Crawford Street Bridge in Providence, Rhode Island, USA, has a width of 1147 ft 350 m. The River Roch is bridged for a distance of 1460 ft 445 m where the culvert passes through the centre of Rochdale, Greater Manchester and this is sometimes claimed to be a breadth.

HIGHEST**World**

The highest bridge in the world is the bridge over the Royal Gorge of the Arkansas River in Colorado, USA. It is 1053 ft 321 m above the water level. It is a suspension bridge with a main span of 880 ft 268 m and was constructed in 6 months, ending on 6 Dec 1929. The highest railway bridge in the world is the single track span at Fades, outside Clermont-Ferrand, France. It was built in 1901–9 with a span of 472 ft 144 m and is 435 ft 132.5 m above the River Sioule.

Great Britain

The highest railway bridge in Great Britain is the Ballochmyle viaduct over the River Ayr, Strathclyde built 169 ft 51.5 m over the river bed in 1846–8 with the then world's longest masonry arch span of 181 ft 55.16 m.

AQUEDUCTS**World longest Ancient**

The greatest of ancient aqueducts was the Aqueduct of Carthage in Tunisia, which ran 87.6 miles 141 km from the springs of Zaghuan to Djebel Djougar. It was built by the Romans during the reign of Publius Aelius Hadrianus (AD 117–38). By 1895, 344

arches still survived. Its original capacity has been calculated at 7,000,000 gal 31.8 million litres per day. The triple-tiered aqueduct Pont du Gard, built in AD 19 near Nîmes, France, is 160 ft 48 m high. The tallest of the 14 arches of Aguas Livres Aqueduct, built in Lisbon, Portugal, in 1784 is 213 ft 3 in 65 m.

World longest Modern

The world's longest aqueduct, in the modern sense of a water conduit, as opposed to an irrigation canal, is the California State Water Project aqueduct, completed in 1974, to a length of 826 miles 1329 km of which 385 miles 619 km is canalised.

Great Britain longest

The longest bridged aqueduct in Britain is the Pont Cysylltau in Clwyd on the Frankton to Llantysilio branch of the Shropshire Union Canal. It is 1007 ft 307 m long, has 19 arches up to 121 ft 36 m high above low water on the Dee. It was designed by Thomas Telford (1757–1834) of Scotland, and was opened for use in 1805.

6. CANALS

Earliest World

Relics of the oldest canals in the world, dated by archaeologists c. 4000 BC, were discovered near Mandali, Iraq early in 1968.

Earliest Great Britain

The earliest canals in Britain were first cut by the Romans. In the Midlands the 11 mile 17 km long Fossdyke Canal between Lincoln and the River Trent at Torksey was built in about AD 65 and was scoured in 1122. Part of it is still in use today. Though the Exeter canal was cut as early as 1564–6, the first wholly artificial major navigation canal in the United Kingdom was the 18½ mile 29.7 km long canal with 14 locks from Whitecoat Point to Newry, Northern Ireland opened on 28 Mar 1742. In Great Britain the Sankey Navigation Canal in Lancashire, 8 miles 12.8 km in length, with 10 locks, was opened in November 1757.

Longest World

The longest canalised system in the world is the Volga–Baltic Canal opened in April 1965. It runs 1850 miles 2300 km from Astrakhan up the Volga, via Kuybyshev, Gor'kiy and Lake Ladoga, to Leningrad, USSR. The longest canal of the ancient world has been the Grand Canal of China from Peking to Hangzhou. It was begun in 540 BC and not completed until 1327 by which time it extended (including canalised river sections) for 1107 miles 1781 km. The estimated work force c. AD 600 reached 5,000,000 on the Pien section. Having been allowed by 1950 to silt up to the point that it was, in no place, more than 6 ft 1.8 m deep, it is now, however, plied by ships of up to 2000 tons/tonnes.

The Belaye More (White Sea) Baltic Canal from Belomorsk to Povenets, in the USSR, is 141 miles 227 km long with 19 locks. It was completed with the use of forced labour in 1933 and cannot accommodate ships of more than 16 ft 5 m in draught.

The world's longest big ship canal is the Suez Canal linking the Red and Mediterranean Seas, opened on 16 Nov 1869 but inoperative from June 1967 to June 1975. The canal was planned by the French diplomatist Count Ferdinand de Lesseps (1805–94) and work began on 25 Apr 1859. It is 100.6 miles 161.9 km in length from Port Said lighthouse to Suez Roads and 197 ft 60 m wide. The construction work force was 8213 men and 368 camels. The largest vessel to transit has been SS *British Progress* a VLCC (Very Large Crude Carrier) of 228 589 tonnes dwt (length 329.66 m 1081.5 ft; beam 48.68 m 159.7 ft at a maximum draft of 25.60 m 84 ft). This was southbound in ballast on 5 July 1976.

Busiest

The busiest big ship canal is the Panama, first transitted on 15 Aug 1914. In 1974 there were a record 14,304 ocean-going transits. The largest liner to transit is *Queen Elizabeth 2* (66,851 gross tons) on 25 Jan 1980 for a toll of \$89,154.62. (then £38,760) The ships with the greatest beam to transit have been the *Acadia*

Forest and the Atlantic Forest of 106.9 ft 32.58 m. The lowest toll was 36 US cents by the swimmer Richard Halliburton in 1928. The fastest transit has been 2 hr 41 min by the US Navy hydrofoil *Pegasus* on 20 June 1979.

Longest Great Britain

Inland Waterways in Great Britain, normally defined as non-tidal (except for a few tidal 'links' on the Thames, Trent and Yorkshire Ouse) rivers and canals, consist of 2394 miles 3852 km with 110 miles 177 km being restored. Of this total 2125 miles 3420 km are inter-linked.

The longest possible journey on the system would be one of 415¾ miles 669 km and 157 locks from Bedford, on the Great Ouse to near Ripon, North Yorkshire.

Largest seaway

The world's longest artificial seaway is the St Lawrence Seaway (189 miles 304 km long) along the New York State–Ontario border from Montreal to Lake Ontario, which enables 80 per cent of all ocean-going ships, and bulk carriers with a capacity of 26,000 tons 26 400 tonnes to sail 2342 miles 3769 km from the North Atlantic, up the St Lawrence estuary and across the Great Lakes to Duluth, Minnesota, USA, on Lake Superior (602 ft 183 m above sea level). The project cost \$470,000,000 (then £168 million) and was opened on 25 Apr 1959.

Irrigation canal

The longest irrigation canal in the world is the Karakumskiy Kanal, stretching 528 miles 850 km from Haun-Khan to Ashkhabad, Turkmenistan, USSR. In September 1971 the 'navigable' length reached 280 miles 450 km. The length of the £370 million project will reach 930 miles 1300 km.

LOCKS

Largest World

The world's largest single lock is that connecting the Schelde with the Kanaaldok system at Zandvliet, west of Antwerp, Belgium. It is 500 m 1640 ft long and 57 m 187 ft wide and is an entrance to an impounded sheet of water 18 km 11.2 miles long.

Largest Great Britain

The largest lock in the United Kingdom is the West Dock, Bristol which measures 1200 × 140 ft 366 × 42.7 m and has a depth of 58 ft 17.7 m.

Deepest World

The world's deepest lock is the John Day dam lock on the Columbia river, Oregon and Washington, USA completed in 1963. It can raise or lower barges 113 ft 34.4 m and is served by a 982 ton 998 tonne gate.

Deepest Great Britain

The deepest lock in Britain is the rebuilt Lock 8/9 at Bath on the Kennet and Avon Canal which will lower boats 19½ ft 5.94 m.

Longest flight

The world's highest lock elevator overcomes a head of 68.58 m 225 ft at Ronquières on the Charleroi-Brussels Canal, Belgium. The two 236 wheeled caissons each able to carry 1350 tons take 22 min to cover the 1432 m 4698 ft long ramp.

The longest flight of locks in the United Kingdom is on the Worcester and Birmingham Canal at Tardebigge, Hereford and Worcester, where in a 2½ mile 4 km stretch there are the Tardebigge (30) and Stoke (6) flights which together drop the canal 259 ft 78.9 m. The highest rise of any boat-carrying plane in Britain was the 225 ft 68.6 m of the 935 ft 285 m long Hobbacott Down plane on the Bude Canal, Cornwall.

Largest cut

The Gaillard Cut (known as 'the Ditch') on the Panama Canal is 270 ft 82 m deep between Gold Hill and Contractor's Hill with a bottom width of 500 ft 152 m. In one day in 1911 as many as 333 dirt trains each carrying 357 tons 363 tonnes left this site. The total amount of earth excavated for the whole Panama Canal as of 1 Oct 1979 was 666,194,450 yd³ 509 338 960 m³ which total will be raised by the further widening of the Gaillard Cut.

7. DAMS

Earliest

The earliest known dams were those uncovered by the British School of Archaeology in Jerusalem in 1974 at Jawa in Jordan. These stone-faced earth dams are dated to c. 3200 BC.

Most massive

Measured by volume, the largest dam in the world is the 98 ft 29.8 m high New Cornelia Tailings earth-fill dam, Arizona, USA with a volume of 274,026,000 yd³ 209 506 000 m³ completed in 1973 to a length of 6.74 miles 10.85 km. The Guri dam across the Caroni River, Venezuela will eventually have a volume of 277,846,000 m³ 363,394,000 yd³.

Largest concrete

The world's largest concrete dam, and the largest concrete structure in the world, is the Grand Coulee Dam on the Columbia River, Washington State, USA. Work on the dam was begun in 1933, it began working on 22 Mar 1941 and was completed in 1942 at a cost of \$56 million. It has a crest length of 4173 ft 1272 m and is 550 ft 167 m high. It contains 10,585,000 yd³ 8 092 000 m³ of concrete and weighs about 19,285,000 tons 19 595 000 tonnes. The hydro-electric power plant (now being extended) will have a capacity of 9,780,000 kW.

Highest

The highest dam in the world is the Grande Dixence in Switzerland, completed in September 1961 at a cost of 1600 million Swiss francs (then £151,000,000). It is 935 ft 285 m from base to rim, 2296 ft 700 m long and the total volume of concrete in the dam is 7,792,000 yd³ 5 957 000 m³. The Rogunsky earth-fill dam will have a final height of 1066 ft 325 m across the Vakhsh river, Tadzhikistan, USSR with a crest length of only 2165 ft 660 m.

Longest

The longest river dam in the world is the 62 ft 19 m high Kiev dam on the river Dnepr, USSR which was completed in 1964 to a length of 33.6 miles 54.1 km. The Yacyreta–Apipe dam across the Paraná on the Paraguay–Argentina borders will extend for 69.6 km 43.24 miles. In the early 17th century an impounding dam of moderate height was built in Lake Hungtze, Kiangsu, China, to a reputed length of 100 km 62 miles.

The longest sea dam in the world is the Afsluitdijk stretching 20.195 miles 32.5 km across the mouth of the Zuider Zee in two sections of 1.553 miles 2,499 km (mainland of North Holland to the Isle of Wieringen) and 18.641 miles 30 km from Wieringen to Friesland. It has a sea-level width of 293 ft 89 m and a height of 24 ft 7 in 7.5 m.

Strongest

The world's strongest structure will be the 242 m 793 ft high Sayano-Shusenskaya dam on the River Yenisey, USSR which is under construction and designed to bear a load of 18 000 000 tonnes/tons from a fully-filled reservoir of 31,300 million m³ 41,000 million yd³ capacity.

United Kingdom

The most massive (5,630,000 yd³ 4 304 000 m³), and longest (2050 ft 625 m crest length) high dam in the United Kingdom is the 240 ft 73 m high Scammonden Dam, West Yorkshire, begun in November 1966 and completed in the summer of 1970. This rock-fill dam carries the M62 on its crest and was built by Sir Alfred McAlpine's. The cost of the project together with the 6½ miles 10 km motorway was £8,400,000. There are longer low dams or barrages of the valley cut-off type, notably the Hanningfield Dam, Essex, built from July 1952 to August 1956 to a length of 6850 ft 2088 m and a height of 64.5 ft 19.7 m. The rock-fill Llyn Brianne Dam, Dyfed is Britain's highest dam reaching 298½ ft 91 m in Nov 1971 and becoming operational on 20 July 1972.

Largest reservoir World

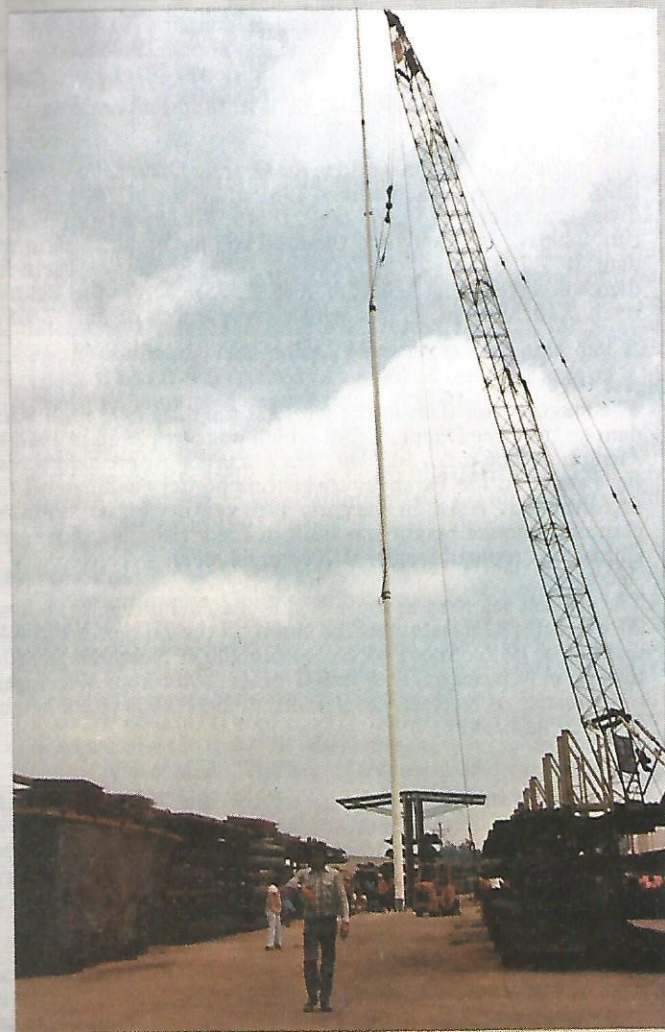
The most voluminous man-made reservoir is at Bratsk (River Angara) USSR, with a volume of 137,214,000 acre-ft 169,25 km³. The dam was completed in 1964.

The world's largest artificial lake measured by surface area is Lake Volta, Ghana, formed by the Akosombo dam completed in 1965. By 1969 the lake had filled to an area of 3275 miles² 8482 km² with a shoreline 4500 miles 7250 km in length.

The completion in 1954 of the Owen Falls Dam near Jinja, Uganda, across the northern exit of the White Nile from the Victoria Nyanza marginally raised the level of that *natural* lake by adding 166,000,000 acre-ft 204,75 km³, and technically turned it into a reservoir with a surface area of 17,169,920 acres 6,9 million ha (26,828 miles² 69 484 km²).

below: The world's highest flag pole being stepped by a 100 ton crane in Chula Vista, California in readiness for Independence Day 1981.

bottom: Jerry Leaf (centre) superintending the setting of his 190 foot 57,9 m tall flagstaff.



Largest reservoir Great Britain

The largest wholly artificial reservoir in Great Britain is the Queen Mary Reservoir, built from August 1914 to June 1925, at Littleton, near Staines, Surrey, with an available storage capacity of 8130 million gal 369,6 million hl and a water area of 707 acres 286 ha. The length of the perimeter embankment is 20,766 ft 6329 m (3.93 miles 6,32 km). Of the valley cut-off type reservoirs the most capacious is Kielder Water in the North Tyne valley, Northumberland, which filled to 44,000 million gallons 2000 million hl from 15 Dec 1980 to mid-1982, and has a surface area of 3114 acres 1260 ha to become England's second largest lake. The deepest reservoir in Europe is Loch Morar, Highland, Scotland, with a maximum depth of 1017 ft 310 m (see also page 70).

Largest polder

The largest of the five great polders in the old Zuider Zee, Netherlands, will be the 149,000 acre 60 300 ha (232.8 miles² 602,9 km²) Markerwaard. Work on the 66 mile 106 km long surrounding dyke was begun in 1957. The water area remaining after the erection of the 1927-32 dam (20 miles 32 km in length) is called IJssel Meer, which will have a final area of 487.5 miles² 1262,6 km².

Largest levees

The most massive levees ever built are the Mississippi levees begun in 1717 but vastly augmented by the US Federal Government after the disastrous floods of 1927. These extend for 1732 miles 2787 km along the main river from Cape Girardeau, Missouri, to the Gulf of Mexico and comprise more than 1000 million yd³ 765 million m³ of earthworks. Levees on the tributaries comprise an additional 2000 miles 3200 km. The Pine Bluff, Arkansas to Venice, Louisiana segment of 650 miles 1046 km is continuous.

8. TUNNELS

LONGEST

Water supply World

The world's longest tunnel of any kind is the New York City West Delaware water supply tunnel, begun in 1937 and completed in 1944. It has a diameter of 13 ft 6 in 4,1 m and runs for 105 miles 168,9 km from the Rondout Reservoir into the Hillview Reservoir, on the border of Yonkers and New York City, NY, USA.

Water supply Great Britain

The longest water supply tunnel in the United Kingdom is the Thames water tunnel from Hampton-on-Thames to Walthamstow, Greater London, completed in 1960 with a circumference of 26 ft 8 in 8,1 m and a length of 18.8 miles 30,3 km.

Railway World

The world's longest main-line rail tunnel is the 22,2 km (13 miles 1397 yd) long Oshimizu Tunnel (Daishimizu) on the Tōkyō-Niigata Joetsu line in central Honshū under the Tanigawa mountain which was holed through on 25 Jan 1979. The cost of the whole project will by March 1981 reach £3150 million. Fatalities in 7 years have been 13.

Railway Great Britain

Great Britain's longest main-line railway tunnel is the Severn Tunnel (4 miles 628 yd 6 km), linking Avon and Gwent completed with 76,400,000 bricks between 1873 and 1886.

Sub-aqueous

The 33.49 mile 53,9 km long Seikan Rail Tunnel will be 240 m 787 ft beneath sea level and 100 m 328 ft below the sea bed of the Tsugaru Strait between Tappi Saki, Honshū, and Fukushima, Hokkaidō, Japan. Once due to be completed by March 1979 at a cost of Yen 200,000 million, major flooding on 6 May 1976 has put back completion beyond 1982. Tests started on the sub-aqueous section (14.5 miles 23,3 km) in 1963 and construction in June 1972. Currently the world's longest sub-aqueous rail tunnel is the Shin Kanmon Tunnel, completed in May 1974 which runs 11.61 miles 18,7 km from Honshū to Kyūshū, Japan.

Subway

The world's longest continuous vehicular tunnel is the Moscow Metro underground railway line from Belyaev to Medvedkovo. It is c. 30.7 km 19.07 miles long and was completed in 1978/9.

Road World

The longest road tunnel is the 10.14 mile 16.32 km long two-lane St Gotthard Road Tunnel from Göschenen to Airolo, Switzerland, opened to traffic on 5 Sept 1980. Nineteen lives were lost during the construction which cost Sw Fr 686 million (then £173.6 million) since autumn 1969.

Great Britain

The longest road tunnel in the United Kingdom is the Mersey Tunnel, joining Liverpool and Birkenhead, Merseyside. It is 2.13 miles 3.43 km long, or 2.87 miles 4.62 km including branch tunnels. Work was begun in December 1925 and it was opened by HM King George V on 18 July 1934. The total cost was £7¾ million. The 36 ft 11 m wide 4-lane roadway carries nearly 7½ million vehicles a year. The first tube of the second Mersey Tunnel was opened on 24 June 1971.

Largest

The largest diameter road tunnel in the world is that blasted through Yerba Buena Island, San Francisco, California, USA. It is 76 ft 23 m wide, 58 ft 17 m high and 540 ft 165 m long. More than 35,000,000 vehicles pass through on its two decks every year.

Hydro-electric, irrigation or sewerage World

The longest irrigation tunnel in the world is the 51.5 mile 82.9 km long Orange-Fish Rivers Tunnel, South Africa, begun in 1967 at an estimated cost of £60 million. The boring was completed in April 1973. The lining to a minimum thickness of 9 inches 23 cm will give a completed diameter of 17 ft 6 in 5.33 m. The Majes project in Peru involves 98 km 60.9 miles of tunnels for hydroelectric and water supply purposes. The dam is at 4200 m 13,780 ft altitude. The Chicago TARP (Tunnels and Reservoir Plan) in Illinois, USA involves 120 miles 193 km of sewerage tunnelling.

Great Britain

The longest in Great Britain is that at Ben Nevis, Highland, which has a mean diameter of 15 ft 2 in 4.6 m and a length of 15 miles 24 km. It was begun in June 1926 and was holed through into Loch Treig on 3 Jan 1930 for hydroelectric use. The greatest diameter water tunnel is the 23 ft 7.01 m tunnel at Clunie, Tayside.

Bridge-Tunnel

The world's longest bridge-tunnel system is the Chesapeake Bay Bridge-Tunnel, extending 17.65 miles 28.40 km from Eastern Shore, Virginia Peninsula to Virginia Beach, Virginia, USA. It cost \$200,000,000 (then £71.4 million) and was completed after 42 months and opened to traffic on 15 Apr 1964. The longest bridged section is Trestle C (4.56 miles 7.34 km long) and the longest tunnel is the Thimble Shoal Channel Tunnel (1.09 miles 1.75 km).

Canal tunnels World

The world's longest canal tunnel is that on the Rove canal between the port of Marseilles, France and the river Rhône, built in 1912-27. It is 4.53 miles 7.29 km long, 72 ft 22 m wide and 50 ft 15 m high, involving 2¼ million yd³ 1.7 million m³ of excavation.

Great Britain

The longest canal tunnel in Great Britain is the Standedge (more properly Stanedge) Tunnel in West Yorkshire on the Huddersfield Narrow Canal built from 1794 to 4 Apr 1811. It measures 3 miles 418 yd 5.21 km in length and was closed on 21 Dec 1944. The longest continuous tunnel of the 43 is the fully restored 3172 yd 3122 m long Dudley Canal Tunnel which had been abandoned in 1962. The now closed Huddersfield Narrow Canal is the highest in the United Kingdom, reaching a height of 638 ft 194 m above sea-level.

Tunnelling records

The world's 7 day record for rapid tunnelling was set in the McDowell Tunnel Extension, Charleston, South Carolina, USA

when 2063 ft 628.8 m was achieved in 7 consecutive 16 hour periods on 30 Mar-5 Apr 1982 by the Mole Construction Co of Cleveland, Ohio on an 8½ ft 2.59 m diameter heading through marl.

The NCB record of 251.4 m 824.8 ft for a 3,80 m 12½ ft wide, 2 m 6½ ft high roadway by a team of 35 pitmen in 5 days was set at West Cannock No 5 Colliery on 30 Mar-3 Apr 1981.

9. SPECIALISED STRUCTURES

Advertising sign Highest World

The highest advertising signs in the world are the four Bank of Montreal logos atop the 72 storey 935 ft 285 m tall First Canadian Place, Toronto. Each sign, built by Claude Neon Industries Ltd, measures 20 × 22 ft 6.09 × 6.70 m and was lifted by helicopter.

Advertising sign Highest Great Britain

The highest advertising sign in Great Britain was the revolving name board of the contractors 'Peter Lind' on the Post Office Tower, London. The illuminated letters were 12 ft 3.7 m tall and 563 to 575 ft 171 to 175 m above the street.

Advertising sign Largest

The greatest advertising sign ever erected was the electric Citroën sign on the Eiffel Tower, Paris. It was switched on on 4 July 1925, and could be seen 24 miles 38 km away. It was in six colours with 250,000 lamps and 56 miles 90 km of electric cables. The letter 'N' which terminated the name 'Citroën' between the second and third levels measured 68 ft 5 in 20.8 m in height. The whole apparatus was taken down after 11 years in 1936. For the largest ground sign see Chapter 6, page 93—Largest letter.

The world's largest neon sign was that owned by the Atlantic Coast Line Railroad Company at Port Tampa, Florida, USA. It measured 387 ft 6 in 118 m long and 76 ft 23 m high, weighed 175 tons 178 tonnes and contained about 4200 ft 1280 m of red neon tubing. It was demolished on 19 Feb 1970. Broadway's largest billboard in New York City is 11,426 ft² 1062 m² in area—equivalent to 107 ft 32.6 m square. Britain's largest illuminated sign is the word PLAYHOUSE extending 90 ft 27 m across the frontage of the new theatre in Leeds, West Yorkshire opened in 1970.

Radio CFMI spelt out its call sign in 400 ft 122 m letters on Grouse Mountain, Vancouver, BC, Canada on 14 Feb 1980 with 450 flares visible from more than 42 miles 67.5 km distant.

The world's most massive animated sign is reputed to be that outside the Circus Circus Hotel, Reno, Nevada named Topsy, the Clown. It is 127 ft 38.7 m tall and weighs over 40 tons 40.8 tonnes with 1.4 miles 2.25 km of neon tubing. His smile measures 14 ft 4.26 m across.

Barn Largest

The largest barn in Britain is one at Frindsbury, Kent. Its length is 219 ft 66.7 m and is still wholly roofed. The Ipsden Barn, Oxfordshire, is 385½ ft 117 m long but 30 ft 9 m wide (11,565 ft² 1074 m²). The longest tithe barn in Britain is one measuring 268 ft 81 m long at Wyke Farm, near Sherborne, Dorset.

Bonfire Largest

The largest recorded bonfire constructed in Britain was the Coronation bonfire using 800 tons 812 tonnes of timber, 1000 gal 4546 litres each of petroleum and tar. It was octagonal in shape and built to a height of 120 ft 36.67 m with a base circumference of 155 ft 47.2 m tapering to 20 ft 6.1 m at the summit, on Arrowthwaite Brows at Whitehaven, Cumbria in 1902.

Breakwater Longest World

The world's longest breakwater is that which protects the Port of Galveston, Texas, USA. The granite South Breakwater is 6.74 miles 10.85 km in length.

Breakwater Longest Great Britain

The longest breakwater in Great Britain is the North Breakwater

at Holyhead, Anglesey, Gwynedd which is 9860 ft (1.86 miles 3025 m) in length and was completed in 1873.

Buildings demolished by Explosives Largest

The largest building demolished by explosives has been the 21 storey Traymore Hotel, Atlantic City, New Jersey, USA, on 26 May 1972 by Controlled Demolition Inc of Towson, Maryland. This 600 room hotel had a cubic capacity of 6,495,500 ft³ 181 340 m³. The tallest chimney ever demolished by explosives was the Matla Power Station chimney, Kriel, South Africa on 19 July 1981. It stood 275 m 902 ft and was brought down by The Santon (Steeplejack) Co. Ltd of Manchester, England.

The greatest recorded simultaneous smokestack demolition was when 18 were felled at the London Brick Co Coronation Works at Kempston Hardwick, Bedfordshire on 30 Nov 1980 when Mrs Wyn Witherall fired the 100 lb 45.3 kg of explosives laid by T.W. Robinson & Co.

Cemetery Largest

The world's largest cemetery is that in Leningrad, USSR, which contains over 500,000 of the 1,300,000 victims of the German army's siege of 1941-2. The largest cemetery in the United Kingdom is Brookwood Cemetery, Brookwood, Surrey. It is owned by the London Necropolis Co. and is 500 acres 200 ha in extent with more than 225,000 interments.

Column Tallest

The tallest columns (as opposed to obelisks) in the world are the 36 fluted pillars 90 ft 27.43 m tall, of Vermont marble in the colonnade of the Education Building, Albany, New York. Their base diameter is 6½ ft 1.98 m. The tallest load-bearing stone columns in the world are those measuring 69 ft 21 m in the Hall of Columns of the Temple of Amun at Karnak, opposite Thebes on the Nile, the ancient capital of Upper Egypt. They were built in the 19th dynasty in the reign of Rameses II in c. 1270 BC.

Crematorium Earliest

The oldest crematorium in Britain is one built in 1879 at Woking, Surrey. The first cremation took place there on 20 Mar 1885, the practice having been found legal after the cremation of Jess Grist Price on Caerlan fields on 13 Jan 1884. The total number of people cremated in Britain since, has been 9,023,613 (to 31 Dec 1980), and the percentage (now 64.48%) is the highest in the world for any country in which cremation is voluntary.

Crematorium Largest

The largest crematorium in the world is at the Nikolo-Arkhangelskoye Cemetery, East Moscow, with 7 twin cremators of British design, completed in March 1972. It has several Halls of Farewell for atheists. Britain's largest is the City of London Crematorium, E.12, which extends over 165 acres 66.77 ha and performed a record 5395 cremations in 1979. The all-time total of 247,892 at Golders Green Crematorium (since 1902) remains unsurpassed.

Dock Gate

The world's largest dock gate is that at Nigg Bay, Cromarty Firth, Highlands, Scotland, first operated in March 1974. It measures 408 ft 124 m long, 50 ft 15.2 m high with a 4 ft 1.21 m thick base, is made of reinforced concrete and weighs 16,000 tons 16 257 tonnes together with its sill, quoins and roundheads. The builders were Brown and Root-Wimpey Highland Fabricators.

Dome Largest World

The world's largest dome is the Louisiana Superdome, New Orleans, USA. It has a diameter of 680 ft 207.26 m (See page 121 for further details.) The largest dome of ancient architecture is that of the Pantheon, built in Rome in AD 112, with a diameter of 142½ ft 43 m.

Dome Largest Great Britain

The largest dome in Britain is that of the Bell Sports Centre, Perth, Scotland, with a diameter of 222 ft 67 m designed by D. B. Cockburn and constructed in Baltic whitewood by Muirhead & Sons Ltd of Grangemouth, Central, Scotland.

Door Largest World

The largest doors in the world are the four in the Vehicle

Assembly Building near Cape Kennedy, Florida, with a height of 460 ft 140 m (see page 115). The world's heaviest door is that leading to the laser target room at Lawrence Livermore National Laboratory, California. It weighs 321.4 tons 326.5 tonnes, is up to 8 ft 2.43 m thick and was installed by Overly.

Door Largest Great Britain

The largest doors in Great Britain are those to the Britannia Assembly Hall, at Filton airfield, Avon. The doors are 1035 ft 315 m in length and 67 ft 20 m high, divided into three bays each 345 ft 105 m across. The largest simple hinged door in Britain is that of Ye Old Bull's Head, Beaumaris, Anglesey, Gwynedd, which is 11 ft 3.35 m wide and 13 ft 3.96 m high.

Door Oldest

The oldest doors in Britain are those of Hadstock Church, Essex, which date from c. 1040 AD and exhibit evidence of Danish workmanship.

Dry dock Largest World

The largest dry dock in the world is that at Koyagi, Nagasaki, Japan completed in 1972. It measures 990 m 3248 ft long; 100 m 328 ft in width and has a maximum shipbuilding capacity of 1,000,000 tons deadweight.

The largest shipbuilding dry dock in the UK is the Belfast Harbour Commission and Harland and Wolff building dock at Belfast, Northern Ireland. It was excavated by Wimpey's to a length of 1825 ft 556 m and a width of 305 ft 93 m and could accommodate tankers of 1,000,000 tons deadweight. Work was begun on 26 Jan 1968 and completed on 30 Nov 1969 and involved the excavation of 400,000 yd³ 306 000 m³. The dry dock under construction at Port Rashid, Dubai, Persian Gulf, opened in March 1979 measures 1722 by 328 ft 525 × 100 m.

Earthworks Largest World

The largest earthworks in the world carried out prior to the mechanical era were the Linear Earth Boundaries of the Benin Empire in the Bendel state of Nigeria. These were first reported in 1900 and partially surveyed in 1967. In April 1973 it was estimated by Mr Patrick Darling that the total length of the earthworks was probably between 4000 and 8000 miles 6400-12 800 km with the total amount of earth moved estimated at from 500 to 600 million yd³ 380-460 million m³.

Earthworks Largest Great Britain

The greatest prehistoric earthwork in Britain is Wansdyke, originally Woden's Dyke, which ran 86 miles 138 km from Portishead, Avon to Inkpen Beacon and Ludgershall, south of Hungerford, Berkshire. It is believed to have been built by the pre-Roman Wessex culture. The most extensive single site earthwork is the Dorset Curses near Gussage St. Michael, dating from c. 1900 BC. The workings are 6 miles 9.7 km in length, involving an estimated 250,000 yd³ 191 000 m³ of excavations. The largest of the Celtic hill-forts is that known as Mew Dun, or Maiden Castle, 2 miles 3 km SW of Dorchester, Dorset. It covers 115 acres 46.5 ha and was abandoned shortly after AD 43.

Fence Largest

The longest fence in the world is the dingo-proof fence enclosing the main sheep areas of Australia. The wire fence is 6 ft 1.8 m high, 1 ft 30 cm underground and stretches for 3437 miles 5531 km. The Queensland State Government discontinued full maintenance in 1982.

Flagstaff Tallest World

The tallest flagstaff ever erected was that outside the Oregon Building at the 1915 Panama-Pacific International Exposition in San Francisco, California, USA. Trimmed from a Douglas fir, it stood 299 ft 7 in 91 m in height and weighed 45 tons 47 tonnes. The tallest unsupported flag pole in the world is a 190 ft 57.9 m tall (plus 12½ ft 3.81 m below ground) metal pole weighing 20,000 lb 9070 kg erected on 27 June 1981 at Chula Vista, California USA. The concept was carried through by Jerry Leaf Sales Inc.

Flagstaff Tallest Great Britain

The tallest flagstaff in Great Britain is a 225 ft 68 m tall Douglas



Other Wessex Superlatives:

1 S.S. Great Britain. The world's largest ship (322 ft 98 m long 3270 grt) at the time of her launching in 1843. 2 Britain's greatest tides (see p. 67). 3 Salisbury Cathedral (see Oldest clock p. 154 and Tallest spire p. 236). 4 Youngest ancient monument (see p. 131). 5 Largest English island, with an area of 147.09 miles² 380.99 km². 6 Oldest English pillar box (see p. 232). 7 England's largest bay, Lyme Bay with a shoreline of 58 miles 93 km across. 8 Rarest British bat (see p. 31). 9 Oldest clock (see p. 154). 10 Britain's heaviest rainfall (see p. 63). 11 Earliest photograph taken in England (see p. 83). 12 Source of England's longest river, the Thames (see p. 72).

fir staff at Kew, Richmond upon Thames, Greater London. Cut in Canada, it was shipped across the Atlantic and towed up the River Thames on 7 May 1958, to replace the old 214 ft 65 m tall staff of 1919.

Fountain Tallest World

The world's tallest fountain is the Fountain at Fountain Hills, Arizona built at a cost of \$1,500,000 for McCulloch Properties Inc. At full pressure of 375 lb/in² 26.3 kg/cm² and at a rate of 5828 Imp. gal/min 26 500 litres/min the 560 ft 170 m tall column of water weighs more than 8 tons/tonnes. The nozzle speed achieved by the three 600 hp pumps is 146.7 mph 236 km/h.

Fountain Tallest Great Britain

The tallest fountain in Great Britain is the Emperor Fountain at Chatsworth, Bakewell, Derbyshire. When first tested on 1 June 1844, it attained the then unprecedented height of 260 ft 79 m. Since the war it has not been played to more than 250 ft 76 m and rarely beyond 180 ft 55 m.

Garbage dump Biggest

Reclamation Plant No. 1, Fresh Kills, Staten Island, opened in March 1974, is the world's largest sanitary landfill. In its first 4 months 450,000 tons of refuse from New York City was dumped on the site by 700 barges.

Gasholder Largest World

The world's largest gasholder is that at Fontaine l'Eveque, Belgium, where disused mines have been adapted to store up to 500 million m³ 17,650 million ft³ of gas at ordinary pressure. Probably the largest conventional gasholder is that at Wien-Simmering, Vienna, Austria, completed in 1968, with a height of 274 ft 8 in 84 m and a capacity of 10.59 million ft³ 300 000 m³.

Gasholder Largest Great Britain

The largest gasholder ever constructed in Great Britain is the East Greenwich Gas Works No. 2 Holder built in 1891 with an original capacity for 12,200,000 ft³ 346 000 m³. As constructed its capacity is 8.9 million ft³ 252 000 m³ with a water tank 303 ft

92 m in diameter and a full inflated height of 148 ft 45 m. The No. 1 holder (capacity 8.6 million ft³ 243 500 m³) has a height of 200 ft 61 m. The River Tees Northern Gas Board's 1186 ft 361 m deep underground storage in use since January 1959 has a capacity of 330,000 ft³ 9300 m³.

Globe Largest revolving

The world's largest revolving globe is the 21½ ton/tonnes 27 ft 11 in 8.50 m diameter sphere in Babson College Wellesley, Massachusetts, USA completed at a cost of \$200,000 (then £71,425) in 1956.

Henges

There are in Britain some 80 henges built c. 2500 BC of which the largest was Durrington Walls, Wiltshire with an average diameter of 1550 ft 472 m. It has been obliterated by road building.

Jetty Longest

The longest deep water jetty in the world is the Quai Hermann du Pasquier at Le Havre, France, with a length of 5000 ft 1524 m. Part of an enclosed basin, it has a constant depth of water of 32 ft 9.8 m on both sides.

Kitchen Largest

The largest kitchen ever set up has been the Indian Government field kitchen set up in April 1973 at Ahmadnagar, Maharashtra in the famine area which daily provided 1.2 million subsistence meals.

Lamp Post Tallest

The tallest lighting columns ever erected are steel standards of 50 m 164 ft 0½ in first put up on 1 Dec 1981 at Ware, Hertfordshire by Concrete Utilities Ltd. The company has exported 4 to the United Arab Emirates.

Lighthouse Brightest and Earliest World

The lighthouse with the most powerful light in the world is Créac'h d'Ouessant lighthouse, established in 1638 and last altered in 1939 on l'Ile d'Ouessant, Finistère, Brittany, France.

It is 163 ft 50 m tall and, in times of fog, has a luminous intensity of up to 500 million candelas. For earliest lighthouse, see *Seven Wonders of the World*, p. 131.

Left: The world's tallest lamp post—a steel standard the height of a 16 storey building (see p. 129). (Concrete Utilities Ltd)

The lights with the greatest visible range are those 1092 ft 332 m above the ground on the Empire State Building, New York City, NY, USA. Each of the four-arc mercury bulbs has a rated candlepower of 450,000,000, visible 80 miles 130 km away on the ground and 300 miles 490 km away from aircraft. They were switched on on 31 Mar 1956.

Lighthouse Brightest Great Britain

The lighthouse in Great Britain with the most powerful light is the shorelight Strumble Head, Dyfed. It has an intensity of 6,000,000 candelas. The Irish light with the greatest intensity is Aranmore on Rinrawros Point, County Donegal.

Lighthouse Remotest Great Britain

The most remote Trinity House lighthouse is The Smalls, about 16 sea miles (18.4 statute miles 29.6 km) off the Dyfed coast. The most remote Scottish lighthouse is Sule Skerry, 35 miles 56 km off shore and 45 miles 72 km northwest of Dunnet Head, Highland. The most remote Irish light is Blackrock, 9 miles 14 km off the Mayo coast.

The heaviest object ever moved by man: the 803,000 ton Norwegian *Statfjord B* oil platform prior to being towed out to the North Sea by 8 tugs (see pp. 132–3).



Lighthouse Tallest

The world's tallest lighthouse is the steel tower 348 ft 106 m tall near Yamashita Park in Yokohama, Japan. It has a power of 600,000 candles and a visibility range of 20 miles 32 km.

Marquee Largest World

The largest tent ever erected was one covering an area of 188,368 ft² 17 500 m² (4.32 acres 1.7 ha) put up by the firm of Deuter from Augsburg, W. Germany, for the 1958 'Welcome Expo' in Brussels, Belgium.

Marquee Largest Great Britain

The largest marquee in Britain is one made by Piggot Brothers in 1951 and used by the Royal Horticultural Society at their annual show (first held in 1913) in the grounds of the Royal Hospital, Kensington and Chelsea, Greater London. The marquee is 310 ft 94 m long by 480 ft 146 m wide and consists of 18¾ miles 30 km of 36 in 91 cm wide canvas covering a ground area of 148,800 ft² 13 820 m². A tent 435 ft 132.5 m long was erected in one lift by thirty-five men of the Military Corrective Training Centre, Colchester on 23 July 1980.

Maypole

The tallest reported Maypole erected in England was one of Sitka spruce 105 ft 7 in 32.12 m tall put up in Pelynt, Cornwall on 1 May 1974.

Maze Largest

The world's largest maze is that at Longleat, nr Warminster, Wilts, with 1.61 miles 2.59 km of paths flanked by 16,180 yew trees. It was opened on 6 June 1978.

Menhir tallest

The tallest menhir found is the 380 ton Grand Menhir Brisé, now in 5 pieces, which originally stood 69 ft 21 m high at Locmariaquer, Brittany, France.

Monument Prehistoric Largest

Britain's largest megalithic prehistoric monuments are the 28½ acre 11.5 ha earthworks and stone circles of Avebury, Wiltshire, 'rediscovered' in 1646. The earliest calibrated date in the area of this neolithic site is c. 4200 BC. The whole work is 1200 ft 365 m in diameter with a 40 ft 12 m ditch around the perimeter and required an estimated 15 million man-hours of work. The largest trilithons exist at Stonehenge, to the south of Salisbury Plain, Wiltshire, with single sarsen blocks weighing over 45 tons/tonnes and requiring over 550 men to drag them up a 9° gradient. The earliest stage of the construction of the ditch has been dated to 2180 ± 105 BC. Whether Stonehenge was a lunar calendar, a temple or an eclipse-predictor remains debatable.

Monument Tallest

The world's tallest monument is the stainless steel Gateway to the West Arch in St Louis, Missouri, USA, completed on 28 Oct 1965 to commemorate the westward expansion after the Louisiana Purchase of 1803. It is a sweeping arch spanning 630 ft 192 m and rising to the same height of 630 ft 192 m and costing \$29,000,000 (then £10.35 million). It was designed in 1947 by Eero Saarinen (d. 1961).



The largest edifice ever built out of water. The 1600 ton Ice Palace built in Tokamachi City, Japan (see p. 131).

The tallest monumental column in the world is that commemorating the battle of San Jacinto (21 Apr 1836), on the bank of the San Jacinto river near Houston, Texas, USA. General Sam Houston (1793–1863) and his force of 743 Texan troops killed 630 Mexicans (out of a total force of 1600) and captured 700 others, for the loss of nine men killed and 30 wounded. Constructed in 1936–9, at a cost of \$1,500,000 (then £372,000), the tapering column is 570 ft 173 m tall, 47 ft 14 m square at the base, and 30 ft 9 m square at the observation tower, which is surmounted by a star weighing 196.4 tons 199,6 tonnes. It is built of concrete, faced with buff limestone, and weighs 31,384 tons 31 888 tonnes.

Monument, Youngest ancient

The newest scheduled ancient monuments are a hexagonal pill box and 48 concrete tank traps south of Christchurch, Dorset built in World War II and protected since 1973.

Mound Largest World

The gravel mound built as a memorial to the Seleucid King Antiochus I (reigned 69–34 BC) on the summit of Nemud Dagı (8205 ft 2494 m) south east of Malatya, Eastern Turkey measures 197 ft 59,8 m tall and covers 7.5 acres 3 ha.

Mound Largest United Kingdom

The largest artificial mound in Europe is Silbury Hill, 6 miles 9,7 km west of Marlborough, Wiltshire, which involved the moving of an estimated 670,000 tons 681 000 tonnes of chalk to make a cone 130 ft 39 m high with a base of 5½ acres 2 ha. Prof. Richard Atkinson in charge of the 1968 excavations showed that it is based on an innermost central mound, similar to contemporary round barrows, and is now dated to 2745 ± 185 BC. The largest long barrow in England is that inside the hill-fort at Maiden Castle (see Earthworks largest GB). It originally had a length of 1800 ft 548 m and had several enigmatic features such as a ritual pit with pottery, limpet shells, and animal bones, but the date of these is not certain. The longest long barrow containing a megalithic chamber is that at West Kennet (c. 2200 BC), near Silbury, measuring 385 ft 117 m in length.

Naturist resorts

The oldest resort is Der Freilichtpark, Klingberg, W. Germany established in 1903. The largest in the world is the Beau Valley Country Club, Warmbaths, South Africa extending over 4 million m² 988 acres with up to 20,000 visitors a year. However, 100,000 people visit the smaller centre Helio-Marin at Cap d'Agde, southern France, which covers 90 ha 222 acres. The term 'nudist camp' is deplored by naturists.

Obelisk (Monolithic) Largest and Oldest

The largest standing obelisk in the world is the Egyptian obelisk brought from Egypt to the Hippodrome of Constantinople in Istanbul, Turkey in AD 390. It stands 58 m 190.2 ft tall. The largest obelisk in the United Kingdom is Cleopatra's Needle on the Embankment, London, which is 68 ft 5½ in 20 m tall and weighs 186.36 tons 189,35 tonnes. It was towed up the Thames from Egypt on 21 Jan 1878 and positioned on 13 Sept. The longest an obelisk has remained *in situ* is that still at Heliopolis, near Cairo, Egypt, erected by Senusret I c. 1750 BC.

Pier Longest World

The world's longest pier is the Damman Pier, Saudi Arabia, on the Persian Gulf. A rock-filled causeway 4.84 miles 7,79 km long joins the steel trestle pier 1.80 miles 2,90 km long, which joins the Main Pier (744 ft 226 m long), giving an overall length of 6.79 miles 10,93 km. The work was begun in July 1948 and completed on 15 Mar 1950.

Pier Longest Great Britain

The longest pier in Great Britain is the Bee Ness Jetty, completed in 1930, which stretches 8200 ft 2500 m along the west bank of the River Medway, 5 to 6 miles 8 to 9,6 km below Rochester, at Kingsnorth, Kent.

Pyramid Largest

The largest pyramid, and the largest monument ever constructed, is the Quetzalcóatl at Cholula de Rivadavia, 63 miles 101 km south-east of Mexico City, Mexico. It is 177 ft 54 m tall and its base covers an area of nearly 45 acres 18,2 ha. Its total volume has been estimated at 4,300,000 yd³ 3 300 000 m³ compared with 3,360,000 yd³ 2,5 million m³ for the Pyramid of Cheops (see

Seven Wonders of the World). The pyramid-building era here was between the 2nd and 6th centuries AD.

Pyramid Oldest

The oldest known pyramid is the Djoser step pyramid at Saqqāra, Egypt constructed to a height of 204 ft 62 m originally with a Tura limestone casing in c. 2650 BC. The largest known single block comes from the Third Pyramid (the pyramid of Mycerinus) and weighs 290 tonnes 285 tons. The oldest New World pyramid is that on the island of La Venta in south-eastern Mexico built by the Olmec people c. 800 BC. It stands 100 ft 30 m tall with a base diameter of 420 ft 128 m.

Scaffolding

The greatest scaffolding structure ever erected was one comprising 750,000 ft (142 miles 228,5 km) of tubing up to 486 ft 148 m in height used in the reconstruction of Guy's Hospital, London in 1971.

Scarecrow

Blackmore village, Essex built the world's most scaring scarecrow in September 1981 to a height of 14 ft 4,26 m with arms 8 ft 2,43 m wide.

Seven Wonders of the World

The Seven Wonders of the World were first designated by Antipater of Sidon in the 2nd century BC. They included the Pyramids of Giza, built by three Fourth Dynasty Egyptian Pharaohs, Khufu (Khufu or Cheops), Kha-f-Ra (Khafre, Khefren or Chepren) and Menkaure (Mycerinus) near El Giza (El Gizeh), south-west of El Qāhira (Cairo) in Egypt. The Great Pyramid ('Horizon of Khufu') was finished c. 2580 BC. Its original height was 480 ft 11 in 146,5 m (now, since the loss of its topmost stones and the pyramidion, reduced to 449 ft 6 in 137 m) with a base line of 756 ft 230 m and thus covering slightly more than 13 acres 5 ha. It has been estimated that a permanent work force of 4000 required 30 years to manoeuvre into position the 2,300,000 limestone blocks averaging 2½ tons/tonnes each, totalling about 5,750,000 tons 5 840 000 tonnes and a volume of 90,700,000 ft³ 2 568 000 m³. A costing exercise published in December 1974, indicated that it would require 405 men 6 years at a cost of \$1.13 billion (then £500 million).

Of the other six wonders only fragments remain of the Temple of Artemis (Diana) of the Ephesians, built in c. 350 BC. at Ephesus, Turkey (destroyed by the Goths in AD 262), and of the Tomb of King Mausolus of Caria, built at Halicarnassus, now Bodrum, Turkey, in c. 325 BC. No trace remains of the Hanging Gardens of Semiramis, at Babylon, Iraq (c. 600 BC); the 40 ft 12 m tall marble, gold and ivory statue of Zeus (Jupiter), by Phidias (5th century BC) at Olympia, Greece (lost in a fire at Istanbul); the 117 ft 35 m tall statue by Chares of Lindus of the figure of the god Helios (Apollo) called the Colossus of Rhodes (sculptured 292–280 BC, destroyed by an earthquake in 224 BC); or the 400 ft 122 m tall world's earliest lighthouse, built by Sostratus of Cnidus c. 270 BC as a pyramidically shaped tower of white marble, (destroyed by earthquake in AD 1375), on the island of Pharos (Greek, *pharos* = lighthouse), off the coast of El Iskandariya (Alexandria), Egypt.

Snow Construction Largest

The world's largest snow construction is the Ice Palace built in the winter of 1980–81 using 1600 tons/tonnes of snow, at Tokamachi City, Niigata prefecture, Japan. The overall height was 23 m 75 ft 5 in and a total of 800 people and 50 bulldozers were used in the construction.

Stairs Longest World

The world's longest stairway is the service staircase for the Niesenbahn funicular which rises to 2365 m 7759 ft near Spiez, Switzerland. It has 11,674 steps and a bannister. The stone cut T'ai Chan temple stairs of 6600 steps in the Shantung Mountains, China ascend 4700 feet in 5 miles 1428 m in 8 km. The longest spiral staircase is one 1103 ft 336,2 m deep with 1520 steps installed in the Mapco–White County Coal Mine, Carmi, Illinois, USA by Systems Control Inc in May 1981.

Stairs Longest Great Britain

The longest stairs in Britain are those from the transformer gallery to the surface 1065 ft 324 m in the Cruachan Power Station,

Argyll, Scotland. They have 1420 steps and the Work Study Dept. allows 27 min 41.4 sec for the ascent.

Statue Longest

Near Bamiyan, Afghanistan there are the remains of the recumbent Sakya Buddha, built of plastered rubble, which was 'about 1000 ft 305 m' long and is believed to date from the 3rd or 4th century AD.

Statue Tallest

The tallest full-figure statue in the world is that of 'Motherland', an enormous pre-stressed concrete female figure on Mamayev Hill, outside Volgograd, USSR, designed in 1967 by Yevgeny Vuchetich, to commemorate victory in the Battle of Stalingrad (1942-3). The statue from its base to the tip of the sword clenched in her right hand measures 270 ft 82.30 m. The Indian *Rope Trick* statue by Calle Örnemark near Jönköping, Sweden measures 103 m 337 ft from the feet of the *fakir* to the top of the rope 25 cm 9.8 in in diameter. Its total weight is 144 tonnes 141.6 tons.

Tidal River Barrier

The largest tidal river barrier in the world is the Thames Barrier at Woolwich, London with 9 piers and 10 gates. There are 6 rising sector gates 61 m 200 ft 1½ in wide and 4 falling radial gates 31.5 m 103 ft 4 in wide. The site was chosen in 1971. Costs to the end of 1982 were £400 million.

Tomb Largest

The largest tomb in the world is that of Emperor Nintoku (died c. AD 428) south of Osaka, Japan. It measures 1594 ft 485 m long by 1000 ft 305 m wide by 150 ft 45 m high.

Totem pole Tallest

A totem pole 173 ft 52.73 m tall was raised on 6 June 1973 at Alert Bay, British Columbia, Canada. It tells the story of the Kwakiutl and took 36 man-weeks to carve.

Vats Largest

The largest vat in the world is named 'Strongbow', used by H. P. Bulmer Ltd., the cider makers of Hereford, England. It measures 64½ ft 19.65 m in height and 75½ ft 23.0 m in diameter with a capacity of 1,630,000 gallons 74 099 hectolitres.

The largest wooden wine cask in the world is the Heidelberg Tun completed in 1751 in the cellar of the Friedrichsbau Heidelberg, West Germany. Its capacity is 1855 hectolitres 40,790 gal.

Wall Longest World

The Great Wall of China, completed during the reign of Chhin Shih Huang-ti (246-210 BC), has a main line length of 2150 miles 3460 km with a further 1780 miles 2860 km of branches and spurs, with a height of from 15 to 39 ft 4.5 to 12 m and up to 32 ft 9.8 m thick. It runs from Shanhaikuan, on the Gulf of Pohai, to Yümén-kuan and Yang-kuan and was kept in repair up to the 16th century. Some 32 miles 51.5 km of the Wall have been destroyed since 1966. Part of the wall was blown up to make way for a dam in July 1979.

Wall Longest Great Britain

The longest of the Roman Walls built in Britain was the 15-20 ft 4.5-6 m tall Hadrian's Wall, built in the period AD 122-126. It ran across the Tyne-Solway isthmus for 73½ miles 118 km from Bowness-on-Solway, Cumbria, to Wallsend-on-Tyne, Tyne and Wear, and was abandoned in AD 383.

Water Flumes

The first of the world's now nearly 250 water flumes was built in Newport Beach, California in 1971.

Waterwheel Largest World and Great Britain

The largest waterwheel in the world is the Mohammadieh Noria wheel at Hama, Syria with a diameter of 131 ft 40 m dating from Roman times. The Lady Isabella wheel at Laxey, Isle of Man is the largest in the British Isles and was built for draining a lead mine and completed on 27 Sept 1854, and disused since 1929. It has a circumference of 228 ft 69 m, a diameter of 72½ ft 22 m and an axle weighing 9 tons/tonnes. The largest waterwheel in Britain is the 50 ft 5 in 15.36 m diameter wheel built in 1870 at

the Welsh Industrial and Maritime Museum, Cardiff. It worked until 1925 at Dinorwic, Gwynedd and is 5 ft 1.52 m in width.

Window Largest

The largest sheet of glass ever manufactured was one of 50 m 538.2 ft, or 20 m 65 ft 7 in by 2.5 m 8 ft 2½ in, exhibited by the Saint Gobian Company in France at the *Journées Internationales de Miroiterie* in March 1958. The largest single windows in the world are those in the Palace of Industry and Technology at Rondpoint de la Défense, Paris, with an extreme width of 218 m 715.2 ft and a maximum height of 50 m 164 ft.

Wine cellar

The largest wine cellars in the world are at Paarl, those of the Ko-operative Wijnbouwers Vereeniging, known as KWV, near Cape Town, in the centre of the wine-growing district of South Africa. They cover an area of 25 acres 10 ha and have a capacity of 30 million gal 136 million litres. The Cienega Winery of the Almaden Vineyards in Hollister, California, USA covers 4 acres 1.6 ha and can house 37,300 oak barrels containing 1.83 million gallons of wine.

Ziqqurat Largest

The largest surviving ziqqurat (from the verb *zaqaru*, to build high) or stage-tower is the Ziqqurat of Ur (now Muqqayr, Iraq) with a base 200 ft by 150 ft 60 by 45 m built to at least three storeys of which the first and part of the second now survive to a height of 60 ft 18 m. It has been variously dated between c. 2050 BC and c. 2800 BC.

10. BORINGS & MINES

Deepest World

Man's deepest penetration into the Earth's crust is a geological exploratory drilling in the Kola peninsula USSR which was announced in November 1981 to have reached 11000 m 36,089 ft. Progress once averaging 11 m 36 ft per day has understandably greatly slowed as the eventual target of 15000 m 49,210 ft is neared.

Deepest Ocean Drilling

The deepest recorded drilling into the sea bed by the *Glomar Challenger* of the US Deep Sea Drilling Project is one of 5709 ft 1740 m off N.W. Spain in 1976. The deepest site is now 7034 m 23,077 ft below the surface on the western wall of the Marianas Trench (see p. 64) in May 1978.

Oil fields

The largest oil field in the world is the Ghawar field, Saudi Arabia developed by ARAMCO which measures 150 miles by 22 miles 240 km by 35 km.

The area of the designated parts of the UK Continental shelf as at 1 Apr 1975 was 223,550 miles² 579 000 km² with total recoverable reserves of 3200 million tonnes of oil and 51,000,000 million ft³ 1 443 000 million m³ of gas. Gas was first discovered in the West Sole Field in October 1965 and oil in the Forties Field (Block 22/17) at 11,000 ft 3352 m from the drilling barge *Sea Quest* on 18 Sept 1970, though a small gasfield was detected near Whitby, N. Yorkshire in 1937. The most productive oil field is expected to be Brent (found in July 1971) where the B platform was installed in August 1976. Production in 1979 reached 350,000 barrels a day and should peak to 850,000 bbd in 1983. The whole UK production in 1979 was 76,415,581 tonnes or 19,558 million Imperial gal. The deepest drilling in British waters is 2400 ft 731 m in Block 206, west of Shetland by Shell using the drill ship *Petrel* in April 1980.

Gas Deposits

The largest gas deposit in the world is at Urengoi, USSR with an eventual production of 180,000 million m³ per year through 6 pipelines from a total estimated to be 7,000,000 million m³.

Oil platforms Largest

The world's most massive oil platform is the *Statfjord B* Concrete Gravity-base platform built at Stavanger, Norway and

operated by Mobil Exploration Norway Inc. Tow-out to its permanent field began on 1 Aug 1981 and it was the heaviest object ever moved—816,000 tonnes or 803,000 long tons ballasted weight. She was towed by 8 tugs with a combined power of 115,000 hp. The height of the concrete structure is 204 m 670 ft and the overall height 271 m 890 ft. It thus weighs almost three times the weight of each of the towers of the World Trade Centre (290,000 long tons).

The world's tallest platform is the Block 280 Guyed Tower in 1000 ft 304.8 m of water in the Gulf of Mexico weighing 38,400 long tons or 4 times the weight of the Eiffel Tower. The production platform in the deepest water in the North Sea is BNOC's Thistle A platform in 530 ft 161.5 m of water.

Gusher Greatest

The most prolific wildcat recorded is the 1160 ft 353 m deep Lucas No. 1, at Spindletop, about 3 miles 4.8 km south of Beaumont, Texas, USA, on 10 Jan 1901. The gusher was heard more than a mile 1.6 km away and yielded 800,000 barrels during the 9 days it was uncapped. The surrounding ground subsequently yielded 142,000,000 barrels.

Oil Spills Greatest

The slick from the Mexican marine blow-out beneath the drilling rig *Ixtoc I* in the Gulf of Campeche, Gulf of Mexico, on 3 June 1979 reached 400 miles 640 km by 5 Aug 1979. It eventually was capped on 24 Mar 1980 after a loss of 3,000,000 barrels (535,000 tons).

The worst oil spill in history was of 236,000 tons/tonnes of oil

from the super-tankers *Atlantic Empress* and *Agoson Captain* when they collided off Tobago on 19 July 1979. The worst oil spill in British waters was from the 118,285 dwt *Torrey Canyon* which struck the Pollard Rock off Land's End on 18 Mar 1967 resulting in a loss of 106,000 tons of oil.

Flare Greatest

The greatest gas fire was that which burnt at Gassi Touil in the Algerian Sahara from noon on 13 Nov 1961 to 9.30 a.m. on 28 Apr 1962. The pillar of flame rose 450 ft 137 m and the smoke 600 ft 182 m. It was eventually extinguished by Paul Neal ('Red') Adair (b. 1932), of Houston, Texas, USA, using 550 lb 245 kg of dynamite. His fee was understood to be about \$1,000,000 (then £357,000).

Water well Deepest World

The world's deepest water bore is the Stensvad Water Well 11-W1 of 7320 ft 2231 m drilled by the Great Northern Drilling Co. Inc. in Rosebud County, Montana, USA in October–November 1961. The Thermal Power Co. geothermal steam well begun in Sonoma County, California in 1955 is now down to 9029 ft 2752 m.

Water well Deepest Great Britain

The deepest well in Great Britain is a water table well 2842 ft 866 m deep in the Staffordshire coal measures at Smestow. The deepest artesian well in Britain is that at the White Heather Laundry, Stonebridge Park, Brent, Greater London, bored in 1911 to a depth of 2225 ft 678 m. The deepest private well is probably that of Friningham Farm, Thurnham, Kent sunk to 415 ft 126.5 m and deepened by bore to 818 ft 249.3 m in 1940.

MINES

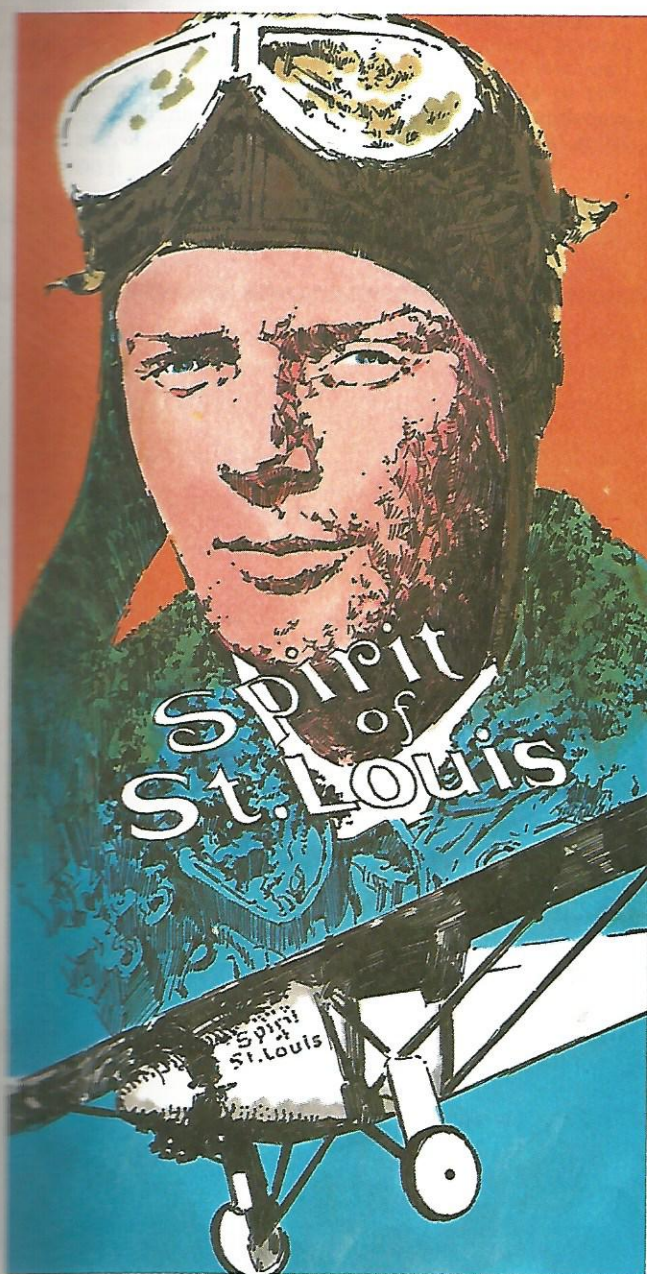
Earliest (World)	c. 41,000 BC	Haematite (red iron ore)	Hhohho district, Swaziland
Earliest (GB)	3390 BC ± 150	Flint	Church Hill, Findon, W. Sussex
Deepest (World)¹	12,500 ft 3777 m	Gold, Western Deep Levels (temp 131° F 55° C)	Carletonville, South Africa
Deepest (GB, all-time)	4132 ft 1259 m	Coal, Arley Seam, Parsonage Colliery (Feb 1949)	Leigh, Greater Manchester
(GB, current)	3690 ft 1127 m	Coal, Bickershaw Colliery	Bickershaw, Greater Manchester
(Cornwall)	3600 ft 1097 m	Tin, Williams Shaft, Dolcoath (1910)	Near Camborne, Cornwall
Copper (largest, open cast)	521,000 tonnes (24 hours)	Copper, Palabora (ore and waste 9 Aug 1980)	Northeast Transvaal, South Africa
Copper (largest underground)	356 miles 573 km tunnels	San Manuel Mine, Magma Copper Co	Arizona, USA
Lead (largest)	>10 per cent of world output	Viburnum Trend	Southeast Missouri, USA
Goldmining (area)	>51 per cent of world output	38 mines of the Witwatersrand Discovery in 1886	South Africa
Gold Mine (largest, world)²	12,100 acres 4900 ha	East Rand Proprietary Mines Ltd	Boksburg, Transvaal, South Africa
Gold Mine (largest, GB)	120,000 fine oz (1854–1914)	Clogon St Davids (disc. 1836)	Powys, Wales
Gold Mine (richest)	49.4 million fine oz	Crown Mines (all-time yield)	Transvaal, South Africa
Iron Mine (largest)	20,300 million tonnes rich ore	Lebedinsky (45–65% ore)	Kursk region, USSR
Platinum (largest)	1,000,000 oz 28 tonnes per annum	Rustenberg Group, Impala plant	Spring, South Africa
Tungsten Mine (largest)	2000 tonnes per day	Union Carbide Mount Morgan mine	Near Bishop, California, USA
Uranium (largest)	4687.5 long tons 4762.6 tonnes	Rio Tinto Zinc open cast pit	Namibia, South West Africa
Spoil Dump (largest, world)	275 million yd ³ 210 million m ³	New Cornelia Tailings	Ten Mile Wash, Arizona, USA
Spoil Dump (largest, GB)	114 acre 46 ha 130 ft 40 m high	Cutacre Clough Colliery tip	Lancashire
Quarry (largest, world)	2.81 miles ² 7.21 km ² . 2540 ft 774 m deep. 3700 million short tons 3355 million tonnes	Bingham Canyon Copper Mine	Nr. Salt Lake City, Utah, USA
Quarry (largest, GB)	500 ft 150 m deep, 1.6 mile 2.6 km circumference	Old Delabole Slate Quarry (since c. 1570)	Cornwall
Open Cast Coal Mine	820 ft 250 m deep 4 × 3 km 2.5 × 2 mile area	Fortuna-Garsdorf (lignite)	Nr. Bergheim, W. Germany

¹ Sinking began in June 1957. Scheduled to reach 3880 m 12 730 ft by 1992. Two 2941.3 m 9649 ft 11 in vertical ventilation shafts are the world's deepest shafts. Total mining costs to 1980 were R560 million.

² The world's most productive gold mine may be Muruntau, Kyzyl Kum, Uzbekistan, USSR. According to one western estimate it produces 80 tonnes of gold in a year. It has been estimated that South Africa has produced in 96 years (1886–1982) 36,400 tons or more than 31 per cent of all gold mined since 3900 bc.

8. The Mechanical World

GUINNESS BOOK OF RECORDS



First solo Trans-Atlantic flight

1. SHIPS

EARLIEST SEA-GOING BOATS

Aborigines are known to have been able to cross the Torres Strait from New Guinea to Australia, then at least 70 km (43½ miles) across, as early as 40,000 BC. They are believed to have used double canoes. A 3 ft 90 cm oar found at Star Carr, North Yorkshire, England, has been dated to c. 7600 BC.

The oldest surviving boat is the 142 ft 43.4 m long 40 ton Nile boat buried near the Great Pyramid of Khufu, Egypt c. 2515 BC and now re-assembled.

The oldest shipwreck ever found is one of a Cycladic trading vessel located off the islet of Dhókós, near the Greek island of Hydra reported in May 1975 and dated to 2450 BC ± 250.

Earliest power

Propulsion by steam engine was first achieved when in 1783 the Marquis Jouffroy d'Abbans ascended a reach of the river Saône near Lyon, France, in the 180 ton 182 tonnes paddle steamer *Pyroscaphe*.

The tug *Charlotte Dundas* was the first successful power-driven vessel. She was a stern paddle-wheel steamer built for the Forth and Clyde Canal, Scotland in 1801–2 by William Symington (1763–1831), using a double-acting condensing engine constructed by James Watt (1736–1819). The screw propeller was invented and patented by the Kent farmer Sir Francis Pettit Smith (1808–71) in 1836.

Oldest vessels

The oldest mechanically propelled boat in the world of certain date is the 48 ton Bristol steam driven dredger or drag-boat *Bertha* of 50 ft 15.42 m, designed by I. K. Brunel in 1844 and afloat in the custody of the Exeter Maritime Museum, Devon, England. Mr G. H. Pattinson's 40 ft 12.20 m steam launch *Dolly*, which was raised after 67 years from Ullswater, Cumbria, in 1962 and now on Lake Windermere, also probably dates from the 1840s. The world's oldest active steam ship is the *Skibladner*, which has plied Lake Mjøsa, Norway since 1856. She has had two major refits and was built in Motala, Sweden. The oldest motor vessel afloat in British waters is the *Proven* on the run from the Clyde to the Inner Hebrides. She was built in Norway in 1866. The oldest vessel on *Lloyd's Yacht Register* is the twin screw steam yacht *Esperence* built on the Clyde in 1869 and salvaged from Windermere in 1941.

Earliest turbine

The first turbine ship was the *Turbinia*, built in 1894 at Wallsend-on-Tyne, Tyne and Wear, to the design of the Hon. Sir Charles Algernon Parsons, OM, KCB (1854–1931). The *Turbinia* was 100 ft 30.48 m long and of 44½ tons 45.2 tonnes displacement with machinery consisting of three steam turbines.

The largest ship ever built—the giant 564,763 ton tanker *Seawise Giant* completed in 1981. She measures more than ¼ mile in length (see p. 135).



installing about 2000 shaft horsepower. At her first public demonstration in 1897 she reached a speed of 34.5 knots (39.7 mph 63.9 km/h).

PASSENGER LINERS

Largest active

The world's largest and the world's longest ever liner is the *Norway* of 70,202 grt and 315,66 m 1035 ft 7½ in in overall length. She was built as the *France* in 1961 and renamed after purchase in June 1979 by Knut Kloster of Norway. Her second maiden voyage was from Southampton on 7 May 1980. Britain's largest liner is RMS *Queen Elizabeth 2* of 66,851 gross tons and with an overall length of 963 ft 293 m completed for the Cunard Line Ltd. in 1969. She set a 'turn round' record of 8 hr 3 min at New York on 17 May 1972. In her planned 1983 'Circle Pacific' cruise, the price of the *Queen Mary* and the *Queen Elizabeth* suites was set at £130,220 (\$235,000). She was requisitioned as a troopship on 3 May 1982.

Largest ever

The RMS *Queen Elizabeth* (finally 82,998 but formerly 83,673 gross tons), of the Cunard fleet, was the largest passenger vessel ever built and had the largest displacement of any liner in the world. She had an overall length of 1031 ft 314 m and was 118 ft 7 in 36 m in breadth and was powered by steam turbines which developed 168,000 hp. Her last passenger voyage ended on 15 Nov 1968. In 1970 she was removed to Hong Kong to serve as a floating marine university and renamed *Seawise University*. On 9 Jan 1972 she was fired by 3 simultaneous outbreaks. Most of the gutted hull had been cut up and removed by December 1977. *Seawise* was a pun on the owner's initials—C. Y. Tung (1911–1982).

WARSHIPS

Battleships Largest World

The largest battleship in the world is now the USS *New Jersey* with a full load displacement of 59,000 tons 59 900 tonnes and an overall length of 888 ft 270 m. She was the last fire support ship on active service and was de-commissioned on 17 Dec 1969. USS *Iowa* is being reactivated at a cost of \$411 million.

Largest all-time

The Japanese battleships *Yamato* (completed on 16 Dec 1941 and sunk south-west of Kyūshū, Japan, by US planes on 7 Apr 1945) and *Musashi* (sunk in the Philippine Sea by 11 bombs and 16 torpedoes on 24 Oct 1944) were the largest battleships ever commissioned, each with a full load displacement of 72,809 tons 73 977 tonnes. With an overall length of 863 ft 263 m, a beam of 127 ft 38.7 m and a full load draught of 35½ ft 10.8 m they mounted nine 460 mm 18.1 in guns and three triple turrets. Each gun weighed 162 tons 164.6 tonnes and was 75 ft 22.8 m in length firing a 3200 lb 1451 kg projectile.

Largest Great Britain

Britain's largest ever and last battleship was HMS *Vanguard* (1944–1960) with a full load displacement of 51,420 tons 52 245 tonnes and an overall length of 814 ft 248.1 m. She mounted eight 15 in 38 cm guns.

Guns

The largest guns ever mounted in any of HM ships were the 18 in 45 cm pieces in the light battle cruiser (later aircraft carrier) HMS *Furious* in 1917. In 1918 they were transferred to the monitors HMS *Lord Clive* and *General Wolfe*. The thickest armour ever carried was in HMS *Inflexible* (completed 1881), measuring 24 in 60 cm backed by teak up to a maximum thickness of 42 in 106.6 cm.

Fastest destroyer

The highest speed attained by a destroyer was 45.25 knots (51.84 mph 83.42 km/h) by the 2830 ton/tonne French destroyer *Le Terrible* in 1935. She was built in Blainville and powered by four Yarrow small tube boilers and two Rateau geared turbines giving 100,000 shaft horse-power. She was removed from the active list at the end of 1957.

AIRCRAFT CARRIERS

Largest World

The warships with the largest full load displacement in the world

are the US Navy aircraft carriers USS *Nimitz* and *Dwight D. Eisenhower* at 91,400 tons. They are 1092 ft 332 m in length overall and have a speed well in excess of 30 knots 56 km/h from their nuclear-powered 280,000 ship reactors. They have to be refuelled after about 900,000 miles 1450 000 km steaming. Their complement is 6100 and the total cost of the *Eisenhower*, commissioned on 18 Oct 1977, exceeded \$2 billion (then £1052 million) excluding the 90-plus aircraft carried. USS *Enterprise* is, however, 1102 ft 335.8 m long and thus still the longest warship ever built.

The Royal Navy's newest aircraft carrier is H.M. Anti-Submarine Cruiser *Invincible* (16,257 tonnes), which became operational in 1981 at a cost of £175 million. She has a 550 ft 167.6 m long flight deck and is 678 ft 206.6 m long overall, and has a top speed of 28 knots being powered by 4 Rolls Royce Olympus TM3B gas turbines.

SUBMARINES

Largest

The world's largest submarine is the first of the USSR Typhoon class code named Oscar. Its launch at the secret covered shipyard at Severodvinsk in the White Sea was announced by NATO on 23 Sept 1980. It is believed to have a diver displacement of 30,000 tons, measure 180 m 590 ft overall and is armed with 24 × SS.N.18 5200 mile 8370 km range ballistic missiles with 1–2 megaton warheads. The largest submarines ever built for the Royal Navy are the four atomic-powered nuclear missile R class boats with a surface displacement of 7500 tons 7620 tonnes and 8400 tons 8534 tonnes submerged, a length of 425 ft 129.5 m, a beam of 33 ft 10 m and a draught of 30 ft 9.1 m.

Fastest

The Russian Alfa-Class nuclear-powered submarines have a reported maximum speed of 42 knots 77.8 km/h down to a depth of 3000 ft 914.4 m.

Deepest

The two USN vessels able to descend 12,000 ft 3650 m are the 3-man *Trieste II* (DSV I) of 303 tons recommissioned in November 1973 and the DSV 2 (deep submergence vessel) USS *Alvin*. The *Trieste II* was reconstructed from the record-breaking bathyscaphe *Trieste* but without the Krupp-built sphere, which enabled it to descend to 35,820 ft 10 917 m. (see Chapter 10 Greatest ocean descent).

TANKERS

Largest

The world's largest tanker and ship of any kind is the 564,763 tons deadweight *Seawise Giant* completed for C. Y. Tung in January 1981. She is 458,54 m 1504 ft long with a beam of 68.86 m 225 ft 11 in, has a draught of 24.61 m 80 ft 9 in. She was converted by Nippon Kokan by adding an 81 m 265 ft 8 in midship section to the 16.47 knot 422,018 dwt tanker *Oppama*.

CARGO VESSELS

Largest

The largest vessel in the world capable of carrying dry cargo is the Liberian ore/oil carrier *World Gala* of 133,748 grt 282,462 dwt with a length of 1109 ft 338 m and a beam of 179 ft 54 m owned by Liberian Trident Transports Inc. completed in 1973. The largest British ore/oil carrier is the Orient Steam Navigation Co's *Lauderdale*, built in Japan in 1972, of 143,959 grt 260,424 dwt and a length of 1101 ft 335.6 m.

Largest whale factory

The largest whale factory ship is the USSR's *Sovietskaya Ukraina* (32,034 gross tons), with a summer deadweight of 46,000 tons 46 738 tonnes completed in October 1959. She is 217.8 m 714 ft 6 in in length and 25.8 m 84 ft 7 in in the beam.

Largest barges

The world's largest RoRo (Roll-on, Roll-off) barge is the *El Rey* and *La Princesa* of 16,700 tons and 580 ft 176.78 m in length. They are operated by Crowley Maritime Corp of San Francisco between Florida and Puerto Rico with tri-level loading of up to 376 truck-trailers.

Most powerful tugs

The world's largest and most powerful tugs are the *Wolraad*

Waltham and her sister ship *John Rae* of 2822 grt rated at 19,200 shaft horse-power and with a bollard pull of 172.7 tons (90% of full power). They have an overall length of 94.623 m (310 ft 5 in) and a beam of 49 ft 10 in (15.2 m). They were built to handle the largest tankers and were completed in April 1976 (Leith, Scotland) and in October 1976 (Durban, South Africa).

Largest car ferry

The world's largest car and passenger ferry is the 30.5 knot 24,600 grt GTS *Finnjet* which entered service across the Baltic between Helsinki and Travemünde, West Germany on 13 May 1977. She can carry 350 cars and 1532 passengers.

Largest hydrofoil

The world's largest naval hydrofoil is the 212 ft 64.6 m long *Plainview* (310 tons 314 tonnes full load), launched by the Lockheed Shipbuilding and Construction Co. at Seattle, Washington, USA on 28 June 1965. She has a service speed of 50 knots (57 mph 92 km/h). Three 165 ton Supramar PTS 150 Mk III hydrofoils carrying 250 passengers at 40 knots 74 km/h ply the Malmö-Copenhagen crossing. They were built by Westermoen Hydrofoil Ltd. of Mandal, Norway. A 500 ton wing ground effect vehicle capable of carrying 900 tons has been reported in the USSR.

Most powerful icebreaker

A 61,000 ton/tonne nuclear powered barge-carrying merchantman designed for work along the USSR's Arctic coast was completed in early 1982 and is known to be designed to break ice.

The largest converted icebreaker has been the 1007 ft 306.9 m long SS *Manhattan* (43,000 shp), which was converted by the Humble Oil Co. into a 150,000 ton 152,407 tonnes icebreaker with an armoured prow 69 ft 2 in long. She made a double voyage through the North-West Passage in arctic Canada from 24 Aug to 12 Nov 1969. The North-West Passage was first navigated by Roald Amundsen (Norway) in the sealing sloop *Gjøa* on 11 July 1906.

Yacht most expensive

King Khalid's Saudi Arabian 212 ft 64.6 m Royal yacht was upstaged as the most expensive in 1979 by a five-deck 282 footer 85.95 m built by the Benetti Shipyard, Viareggio, Italy for a reputed hull price of \$24 million (then £10.9 million) to the order of Adnan Khashoggi. It has a helicopter and 5 speed boats.

Largest dredger

The world's most powerful dredger is the 468.4 ft 142.7 m long *Prins der Nederlanden* of 10,586 grt. She can dredge 20,000 tonnes/tons of sand from a depth of 35 m 115 ft via two suction tubes in less than an hour.

Wooden ship

The heaviest wooden ship ever built was the *Richelieu*, 333 ft 8 in 101.70 m long and of 8534 tons launched in Toulon, France on 3 Dec 1873. HM Battleship *Lord Warden*, completed in 1869, displaced 7940 tons 8060 tonnes. The longest modern wooden ship ever built was the New York built *Rochambeau* (1867-72) formerly *Dunderberg*. She measured 377 ft 4 in 115 m overall. It should be noted that the biblical length of Noah's Ark was 300 cubits or, at 18 in 45.7 cm to a cubit, 450 ft 137 m (but see Junks below).

Largest human powered

The largest human powered ship was the giant Tessarakonteres 3-banked catamaran galley with 4000 rowers built for Ptolemy IV c. 210 BC in Alexandria, Egypt. It measured 128 m 420 ft with up to 8 men to an oar of 38 cubits (17.5 m 57 ft) in length.

The world's longest canoe is the 117 ft 35.7 m long 20 ton Kauri wood Maori war canoe Nga Toki Matawhaorua built by adzes at Kerikeri Inlet, New Zealand in 1940 for a crew of 70 or more.

SAILING SHIPS

Largest

The largest sailing vessel ever built was the *France II* (5806 gross tons), launched at Bordeaux in 1911. The *France II* was a steel-hulled, five-masted barque (square-rigged on four masts and fore and aft rigged on the aftermost mast). Her hull measured

438 ft 127.4 m overall. Although principally designed as a sailing vessel with a stump topgallant rig, she was also fitted with two steam engines. She was wrecked in 1922. The only seven-masted sailing schooner ever built was the 375.6 ft 114.4 m long *Thomas W. Lawson* (5218 gross tons) built at Quincy, Massachusetts, USA in 1902 and lost in the English Channel on 15 Dec 1907.

The world's only surviving First Rate Ship-of-the-Line is the Royal Navy's 104-gun battleship HMS *Victory* laid down at Chatham, Kent on 23 July 1759 constructed from the wood of some 2200 oak trees. She bore the body of Admiral Nelson from Gibraltar to Portsmouth arriving 44 days after serving as his victorious flagship at the Battle of Trafalgar on 21 Oct 1805. In 1922 she was moved to No. 2 dock, Portsmouth—site of the world's oldest graving dock. The total length of her cordage (both standing and running rigging) is 100,962 ft (19.12 miles 30.77 km.)

Largest junks

The largest junk on record was the sea-going *Cheng Ho*, flagship of Admiral Cheng Ho's 62 treasure ships, of c. 1420, with a displacement of 3100 tons 3150 tonnes and a length variously estimated up to 538 ft 164 m and believed to have had 9 masts. A river junk 361 ft 110 m long, with treadmill-operated paddle-wheels, was recorded in AD 1161. In c. AD 280 a floating fortress 600 ft 182.8 m square, built by Wang Chün on the Yangtze, took part in the Chin-Wu river war. Present-day junks do not, even in the case of the Chiangsu traders, exceed 170 ft 51.8 m in length.

Longest day's run under sail

The longest day's run claimed by any sailing ship was one of 465 nautical miles (535.45 statute miles 861.72 km) by the clipper *Champion of the Seas* (2722 registered tons) of the Liverpool Black Ball Line running before a north-westerly gale in the south Indian Ocean under the command of Capt. Alex. Newlands. The elapsed time between the fixes was 23 hr 17 min giving an average of 19.97 knots 37.00 km/h.

Largest sails

Sails are known to have been used for marine propulsion since 3500 BC. The largest spars ever carried were those in HM Battleship *Temeraire*, completed at Chatham, Kent, on 31 Aug 1877. The fore and main yards measured 115 ft 35 m in length. The mainsail contained 5100 ft 1555 m of canvas, weighing 2 tons 2.03 tonnes and the total sail area was 25,000 ft² 2322 m². This compares with an area of 18,000 ft² 1672 m² for the parachute spinnaker on Vanderbilt's *Ranger* in 1937.

Largest wreck

The largest ship ever wrecked has been the 312,186 dwt VLCC (Very Large Crude Carrier) *Energy Determination* which blew up and broke in two in the Straits of Hormuz on 12 Dec 1979. Her full value was \$58 million (then £26.3 million).

Largest collision

The closest approach to an irresistible force striking an immovable object occurred on 16 Dec 1977, 22 miles 35 km off the coast of Southern Africa when the tanker *Venol* (330,954 dwt) struck her sister ship *Venpet* (330,869 dwt).

OCEAN CROSSINGS

Atlantic Earliest

The earliest crossing of the Atlantic by a power vessel, as opposed to an auxiliary engined sailing ship, was a 22-day voyage begun in April 1827, from Rotterdam, Netherlands, to the West Indies by the *Curaçao*. She was a 127 ft 38.7 m wooden paddle boat of 438 tons, built as the *Calpe* in Dover in 1826 and purchased by the Dutch Government for the West Indian mail service. The earliest Atlantic crossing entirely under steam (with intervals for desalting the boilers) was by HMS *Rhadamanthus* from Plymouth to Barbados in 1832. The earliest crossing of the Atlantic under continuous steam power was by the condenser-fitted packet ship *Sirius* (703 tons 714 tonnes) from Queenstown (now Cobh), Ireland, to Sandy Hook, New Jersey, USA, in 18 days 10 hr on 4-22 Apr 1838.

Atlantic Fastest World

The fastest Atlantic crossing was made by the *United States* (then 51,988, now 38,216 gross tons), former flagship of the

United States Lines. On her maiden voyage between 3 and 7 July 1952 from New York City, NY, USA, to Le Havre, France, and Southampton, England, she averaged 35.59 knots, or 40.98 mph 65.95 km/h for 3 days 10 hr 40 min (6.36 p.m. GMT, 3 July to 5.16 a.m., 7 July) on a route of 2949 nautical miles 5465 km from the Ambrose Light Vessel to the Bishop Rock Light, Isles of Scilly, Cornwall. During this run, on 6-7 July 1952, she steamed the greatest distance ever covered by any ship in a day's run (24 hr)—868 nautical miles 1609 km, hence averaging 36.17 knots (41.65 mph 67.02 km/h). The maximum speed attained from her 240,000 shp engines was 38.32 knots (44.12 mph 71.01 km/h) on trials on 9-10 June 1952.

Pacific Fastest

The fastest crossing of the Pacific Ocean from Yokohama to Long Beach, California (4840 nautical miles 8960 km) was 6 days 1 hr 27 min (30 June-6 July 1973) by the container ship *Sea-Land Commerce* (50,315 tons) at an average of 33.27 knots (38.31 mph 61.65 km/h).

Channel Crossing Fastest

The fastest crossing of the English Channel by a commercial ferry is 52 min 49 sec from Dover to Calais by Townsend Thoresen's *Pride of Free Enterprise* in a Force 7 Gale on 9 Feb 1982.

Southernmost

The farthest south ever reached by a ship was achieved on 15 Feb 1912 when the *Fram* reached Lat. 78° 41' S. off the Antarctic coast.

Deepest anchorage

The deepest anchorage ever achieved is one of 24,600 ft 7498 m in the mid-Atlantic Romanche Trench by Capt. Jacques-Yves Cousteau's research vessel *Calypso*, with a 5½ mile 8.9 km long nylon cable, on 29 July 1956.

Greatest roll

The ultimate in rolling was recorded in heavy seas in the Trans-Tasman single handed race when Bill Belcher's 10 m 32 ft 9½ in sloop *Josephine II* double rolled through 720° before dumping him on Middleton Reef on 15 Apr 1978.

Crossing the Line Ceremony Largest

The largest recorded ceremony on any warship for initiating those who have crossed the equator for the first time occurred aboard the *USS Nimitz* in the South Atlantic in mid-January 1980 when 4421 *Nimitz* polywogs became shellbacks.

HOVERCRAFT (skirted air cushion vehicles)

Fastest

The ACV (air-cushion vehicle) was first made a practical proposition by Sir Christopher Sydney Cockerell, CBE, FRS (b. 4 June 1910), a British engineer who had the idea in 1954, published his *Ripplecraft Report 1/55* on 25 Oct 1955 and patented it on 12 Dec 1955. The earliest patent relating to air-cushion craft was applied for in 1877 by John I. Thornycroft (1843-1928) of Chiswick, London and the Finn Toivo Kaario developed the idea in 1935. The first flight by a hovercraft was made by the 4 ton/tonnes Saunders-Roe SR-N1 at Cowes on 30 May 1959. With a 1500 lb 680 kg thrust Viper turbojet engine, this craft reached 68 knots 126 km/h in June 1961. The first hovercraft public service was run across the Dee Estuary by the 60 knot 111 km/h 24-passenger Vickers-Armstrong VA-3 between July and September 1962.

Largest

The world's largest civil hovercraft is the 305 ton British-built SRN 4 Mk III with a capacity of 416 passengers and 60 cars. It is 186 ft 56.69 m in length, is powered by 4 Bristol Siddeley Marine Proteus engines giving a maximum speed in excess of the permitted operating speed of 65 knots.

Fastest warship

The world's fastest warship is the 78 ft 23.7 m long 100 ton/tonne US Navy test vehicle SES-100B. She attained 91.9 knots 103.9 mph on 25 Jan 1980 on the Chesapeake Bay Test Range, Maryland, USA. A contract for a 3000 ton Large Surface Effect Ship (LSES) was placed by the US Department of Defense with Bell Aerospace in September 1977 for delivery in mid-1981.



The world's first hovercraft from a photograph taken in 1959 on the Isle of Wight, England. It reached a speed of 68 knots. (John Topham Picture Library)

Longest flight

The longest hovercraft journey was one of 5000 miles 8047 km through eight West African countries between 15 Oct 1969 and 3 Jan 1970 by the British Trans-African Hovercraft Expedition.

Highest

The greatest altitude at which a hovercraft is operating is on Lago Titicaca, Peru, where since 1975 an HM2 Hoverferry has been hovering 12,506 ft 3811 m above sea level.

2. ROAD VEHICLES

Guinness Superlatives has now published automotive records in greater detail in the more specialist publication *Car Facts and Feats* (3rd edition price £6.95).

COACHING

Before the widespread use of tarred road surfaces from 1845 coaching was slow and hazardous. The zenith was reached on 13 July 1888 when J. Selby, Esq., drove the 'Old Times' coach 108 miles 173 km from London to Brighton and back with 8 teams and 14 changes in 7 hr 50 min to average 13.79 mph 22.19 km/h. Four-horse carriages could maintain a speed of 21½ mph 34 km/h for nearly an hour. The *Border Union* stage coach, built c. 1825, ran 4 in hand from Edinburgh to London (393 miles 632 km). When it ceased in 1842, due to competition from railways, the allowed schedule was 42 hr 23 min to average better than 9¼ mph 14.9 km/h.

MOTOR CARS

Most cars

In 1979 it was estimated that in the United States 143,092,000 drivers drove 159,400,000 vehicles 1,525,000 million miles 2454 000 million km or 204.9 miles 329.8 km per week per driver.

Earliest automobiles Model

The earliest automobile of which there is record is a two-foot-long steam-powered model constructed by Ferdinand Verbiest (d. 1687) a Belgian Jesuit priest, and described in his *Astronomia Europaea*. His model of 1668 was possibly inspired either by Giovanni Branca's description of a steam turbine, published in his *La Macchina* in 1629, or by writings on 'fire carts' or *Nan Huai-jen* during the Chu dynasty (c. 800 BC) in the library of the Emperor Khang-hi of China, to whom he was an astronomer during the period c. 1665-80.

Earliest automobiles Passenger-carrying

The earliest mechanically propelled passenger vehicle was the first of two military steam tractors, completed at the Paris Arsenal in 1769 by Nicolas-Joseph Cugnot (1725-1804). This reached 2¼ mph 3.6 km/h. Cugnot's second, larger tractor, completed in May 1771, today survives in the *Conservatoire nationale des arts et métiers* in Paris. Britain's first steam carriage carried eight passengers on 24 Dec 1801 in Camborne, Cornwall and was built by Richard Trevithick (1771-1833).

Earliest automobiles Internal combustion

The first true internal-combustion engine vehicle was that built by the Londoner Samuel Brown (Patent 5350, 25 Apr 1826) whose 4hp 4.05 cv two cylinder atmospheric gas 88 litre engine carriage climbed Shooters Hill, Blackheath, Kent in May 1826. The first successful petrol-driven car, the Motorwagen, built by Karl-Friedrich Benz (1844-1929) of Karlsruhe, ran at Mannheim, Germany, in late 1885. It was a 5 cwt 250 kg 3-wheeler reaching 8-10 mph 13-16 km/h. Its single cylinder 4-stroke chain-drive engine (bore 91.4 mm, stroke 160 mm) delivered 0.85 hp 0.86 cv at 200 rpm. It was patented on 29 Jan 1886. Its first 1 km road test was reported in the local newspaper, the *Neue Badische Landeszeitung*, of 4 June 1886, under the news heading 'Miscellaneous'. Two were built in 1885 of which one has been preserved in 'running order' at the Deutsches Museum, Munich.

Earliest automobile British

In Britain Edward Butler (1863-1940) built a 1042 cc twin-cylinder 2-stroke petrol-engined tricycle at Erith, Kent in 1888 but the earliest successful British built car with an internal combustion engine was the Bremer car built at Walthamstow, Greater London, by the engineer Frederick William Bremer (1872-1941) which first took the road in December 1894 though the body was not completed until the following month. The car has a single cylinder horizontal, water cooled 600 cc engine with a two-speed chain drive and tiller steering. The maximum speed is about 15 mph and the car in 1964 completed the London-to-Brighton run. It is now housed in the Vestry House Museum, London E17. Henry Hewetson drove an imported Benz Velo in the south-eastern suburbs of London in November 1894.

Registrations Earliest and Most Expensive

The world's first plates were probably introduced by the Parisian police in France in 1893. Registration plates were introduced in Britain in 1903. The original A1 plate was secured by the 2nd Earl Russell (1865-1931) for his 12 hp 12.1 cv Napier. This plate, willed in September 1950 to Mr Trevor T. Laker of Leicester, was sold in August 1959 for £2500 in aid of charity. It was reported in April 1973 that a 'cherished' number plate changed hands for £14,000 in a private deal. On 9 Dec 1978 Sir Run Run Shaw CBE bid HK\$330,000 (then £34,800) for a 'Good Fortune' number plate at a Hong Kong Government charity auction.

FASTEST CARS (see also p. 140)**Diesel engined**

The prototype 230 hp 3 litre Mercedes C 111/3 attained 327.3 km/h 203.3 mph in tests on the Nardo Circuit, Southern Italy on 5-15 Oct 1978.

Rocket Powered Ice Sled

The highest speed recorded is 247.93 mph 399.00 km/h by Oxygen driven by Sammy Miller (b. 15 Apr 1945) on Lake George, NY, USA on 15 Feb 1981.

Road cars

Various detuned track cars have been licensed for road use but are not purchasable production models. Manufacturers of very fast and very expensive models are understandably reluctant to allow maximum speed tests to be carried out. The fastest current manufacturer's claim (as opposed to independently road-tested) for production road cars, are 280 km/h 173.6 mph for the De Tomaso Pantera and 279.6 km/h 173.4 mph for the Lamborghini Countach LP 400S. The highest ever tested speed is 168 mph 270 km/h for the Aston Martin V8 Vantage by Motor. The 0-60 mph 0-96.5 km/h acceleration was 5.2 sec.

The highest road-tested acceleration reported is 0-60 mph 0-96.5 km/h in 4.2 sec and 0-100 mph 0-160.9 km/h in 10.8 sec by the 7 litre A. C. Cobra 1965, in November 1967 by Roger Bell (Motor) and John Bolster (Autosport).

LARGEST CARS**World**

Of cars produced for private road use, the largest has been the Bugatti 'Royale' type 41, known in Britain as the 'Golden Bugatti', of which only six (not seven) were made at Molsheim, France by the Italian Ettore Bugatti, and some survive. First built in 1927, this machine has an 8-cylinder engine of 12.7 litres

capacity, and measures over 22 ft 6.7 m in length. The bonnet is over 7 ft 2 m long. Of custom built cars the longest is the stretched 1962 Chevrolet Station Wagon owned by the Rev. Gerald R. Manning of Middletown, Virginia. The finished result is 32 ft 4 in 9.85 m overall and weighs 4500 lb 2040 kg. (For cars not intended for private use, see Largest engines.)

Largest engines All-time and current records

The world's most powerful piston engine car is 'Quad A1.' It was designed and built in 1964 by Jim Lytle and was first shown in May 1965 at the Los Angeles Sports Arena. The car featured four Allison V12 aircraft engines with a total of 6840 in³ 112,087 cc displacement and 12,000 hp. The car has 4-wheel drive, 8 wheels and tyres, and dual 6-disc clutch assemblies. The wheelbase is 160 in 406.4 cm, and weighs 5860 lb 2658 kg. It has 96 spark plugs and 96 exhaust pipes.

The largest car ever used was the 'White Triplex', sponsored by J. H. White of Philadelphia, Pennsylvania, USA. Completed early in 1928, after two years work, the car weighed about 4 tons 4.06 tonnes and was powered by three Liberty V12 aircraft engines with a total capacity of 81,188 cc, developing 1500 bhp at 2,000 rpm. It was used to break the world speed record but crashed at Daytona, Florida on 13 Mar 1929.

Currently the most powerful car on the road is the 6-wheeled Jameson-Merlin, powered by a 27,000 cc 1760 hp Rolls Royce V12 Merlin aero-engine, governed down to a maximum speed of 185 mph 298 km/h. It has a range of 300 miles 480 km with tanks of 60 gal 272 litres capacity. The vehicle weighs 2.65 tons 2.69 tonnes overall.

Largest engines Production car

The highest engine capacity of a production car was 13½ litres 824 in³, in the case of the US Pierce-Arrow 6-66 Raceabout of 1912-18, the US Peerless 6-60 of 1912-14 and the Fageol of 1918. The largest currently available is the V8 engine of 500.1 in³ 8194 cc, developing 235 bhp net, used in the 1972 Cadillac Fleetwood Eldorado.

Petrol consumption

The world record for fuel economy on a closed circuit course (one of 14.076 miles 22.00 km) was set by Ben Visser (US) in a highly modified 1.5 litre 90.8 in³ 1959 Opel Caravan station wagon in the annual Shell Research Laboratory contest at Wood River, Illinois, driven by Ben and Carolyn Visser on 2 Oct 1973 with 451.90 ton miles per US gal and 376.59 miles 606.0 km on one US gal, i.e. 3.78 litres. These figures are equivalent to 542.70 ton miles and 452.26 miles 727.84 km on an imperial gallon i.e. 4.54 litres. The tyre pressure was 200 lb/in² and the maximum speed was 12 mph 19.3 km/h.

In October 1979 at the International Fuel Saving Competition for cars and special vehicles in Switzerland a 20 cc diesel engined 3-wheeler driven by Franz Maier of Stuttgart covered 1284.13 km on 1 litre of fuel—equivalent to 3627.26 miles to the Imperial gallon. Douglas Malewicki drove 263.6 miles 424.2 km from Anaheim, California to Las Vegas, Nevada at an average speed of 56.3 mph 90.6 km/h using only 1.684 US gallons of fuel for an mpg of 156.53 (US) 187.98 (Imperial) or 66.55 km per litre in his 3 wheeled 359 cc diesel powered California Commuter road car. The route involved ascents of 7993 ft 2436 m.

Most durable car

The highest recorded mileage for a car was 1,184,880 authenticated miles 1 906 879 km by August 1978 for a 1957 Mercedes 180 D owned by Robert O'Reilly of Olympia, Washington State, USA. Its subsequent fate is unknown.

Taxis

The largest taxi fleet was that of New York City, which amounted to 29,000 cabs in October 1929, compared with the present figure of 12,500 plus an equal number of 'gypsies'. London's most durable 'cabby' was F. Fuller, who drove from 26 Oct 1908 until he handed in his badge on 16 Sept 1966—57 years later. On 17 May 1982 there were 12,570 cabs and 18,000 drivers in London. The longest fare on record is one of 7533 miles 12 133 km through 10 countries from Marble Arch, London on 19 Sept-18 Oct 1981. The trip was sponsored for charity. The driver was Stephen Tillyer.



The automotive acceleration champion, the 7 litre A.C. Cobra which in 1967 reached 100 mph 160.9 km/h from stationary in 10.8 sec (see p. 138).

MOST EXPENSIVE CARS

Special

The most expensive car to build has been the US Presidential 1969 Lincoln Continental Executive delivered to the US Secret Service on 14 Oct 1968. It has an overall length of 21 ft 6.3 in 6.56 m with a 13 ft 4 in 4.06 m wheel-base and with the addition of 2 tons 2.03 tonnes of armour plate, weighs 5.35 tons 5.43 tonnes (12,000 lb 5443 kg). The estimated research, development and manufacture cost was \$500,000 (then £208,000) but it is rented at \$5000 (now £2300) per annum. Even if all four tyres were shot out it can travel at 50 mph 80 km/h on inner rubber-edged steel discs.

Carriage House Motor Cars Ltd of New York City in March 1978 completed 4 years work on converting a 1973 Rolls Royce including lengthening it by 30 in 76.2 cm. The price tag was \$500,000 (then £263,157).

Standard

The most expensive British standard car is the Rolls-Royce 8 cylinder 6750 cc Camargue, quoted in June 1982 at £83,122 (incl. tax). More expensive are custom built models. Jack Barclay Ltd of Berkeley Square, London W1 quote £170,000 for an armour-plated Rolls-Royce Phantom VI without tax.

Used

The greatest price paid for any used car has been \$421,040 (then £210,520), for a 1936 Mercedes-Benz Roadster from the M. L. Cohn collection, by a telephone bidder in Monaco, at Christie's sale on 25 Feb 1979 at the Los Angeles Convention Center. The greatest collection of vintage cars is the William F. Harrah Collection of 1700, estimated to be worth more than \$4 million (£2.3 million), at Reno, Nevada, USA. Mr Harrah was still looking for a Chalmers Detroit 1909 Tourabout, an Owen car of 1910-12 and a Nevada Truck of 1915 at the time of his death in 1978.

Most inexpensive

The cheapest car of all-time was the 1922 Red Bug Buckboard, built by Briggs and Stratton Co of Milwaukee, Wisconsin, listed at \$150-\$125. It had a 62 in 1.57 m wheel base and weighed 245 lb 111 kg. The early models of the King Midget cars were sold in kit form for self-assembly for as little as \$100 (then £24 16s) as late as 1948. By mid-1982 the cheapest quoted new car price in Britain was £2285 for a Citroën 2 CVX Special 600 cc 4 door car imported from France.

Longest production

The longest any car has been in mass production is 44 years (1938 to date), including wartime interruptions, in the case of the Volkswagen 'Beetle' series, originally designed by Ferdinand Porsche. The 20 millionth car came off the final production line in Mexico on 15 May 1981. Residual production continues in South America. Britain's all-time champion is the Morgan series 4/4 from 27 Dec 1935 from the Morgan Motor Co of Malvern (founded 1910). Britain's champion seller has been the Mini which originally sold for £496 19s 2d in August 1959. Sales reached 4,839,991 by 14 May 1982.

Round the world driving

The fastest circumnavigation embracing more than an equator's length of driving (24,901.47 road miles 40 075.0 km) is one in 74 days 1 hr 11 min by Garry Sowerby (driver) and Ken Langley (navigator) of Canada from 6 Sept to 19 Nov 1980 in a Volvo 245 westwards from Toronto, Canada through 4 continents and 23 countries. The distance covered was 42 745.8 km 26,561.0 miles.

The first recorded round the world drive by lorry was by Daniele Pellegrini and Cesare Gerolimetto of Italy, in a 122 hp Iveco 75 PC 6 cylinder 4 wheel drive Fiat diesel, from Vicenza on 17 Aug 1976 arriving back 2 years 245 days later on 19 Apr 1979. The route took 184 000 km 114,300 miles including 240 km 1500 miles off-road.

Round Britain driving

The best recorded time for non-stop driving the 3670 miles 5906 km Round Britain course on an Official Certified Trial under the surveillance of a motoring organisation and with Tachograph readings, is 78 hr 31 min to average 46.74 mph 74.48 km/h in a Triumph Acclaim driven by David Gittens, Robert Morgan and Richard Neale on 10-14 May 1982. This charity trial by Hagley and District Round Table was sponsored by DIY Motor Stores, Austin Rover and Lex Mead (Stourbridge).

Mountain driving

Cars have been driven up Ben Nevis, Highland, Scotland (4406 ft 1343 m) on 4 occasions. The record times are 7 hr 23 min (ascent) and 1 hr 55 min (descent) by George F. Simpson in an Austin 7 on 6 Oct 1928. Henry Alexander accomplished the feat twice in May 1911 (Model T Ford) and on 13 Sept 1928 (Model A Ford).



above: The California Commuter car which has a proven economy of 187.98 miles per Imperial gallon (see p. 138). below: Sammy Miller's rocket-powered ice sled which in 1981 streaked across the frozen Lake George, New York State at 247.93 mph 399.00 km/h (see p. 138). (Ron Vigneri)



FASTEST CARS

CATEGORY	MPH	KMH	CAR	DRIVER	PLACE	DATE
Rocket Engine (official)	622.287	1001.472	Blue Flame	Gary Gabriel (US)	Bonneville, Utah, USA	23 Oct 1970
Jet Engine	613.995	988.129	Spirit of America	Norman Breedlove (US)	Bonneville, Utah, USA	15 Nov 1965
Jet Engine (British)	418.118	672.877	Thrust Two	Richard Noble (UK)	Bonneville, Utah, USA	10 Oct 1981
Wheel Driven (turbine)	429.311	690.909	Bluebird	Donald Campbell (UK)	Lake Eyre, Australia	17 July 1964
Wheel Driven (multi engine)	418.504	673.516	Goldenrod	Robert Summers (US)	Bonneville, Utah, USA	12 Nov 1965
Wheel Driven (single engine)	357.391	575.149	Autolite 999	Bob Herda	Bonneville, Utah, USA	2 Nov 1967
Track Racing Car	257.0	413.6	Porsche 917/30 Can-Am	Mark Donohue (US)	Toulon, France	Aug 1973
Rocket Engine (unofficial)*	739.666	1190.377	Budweiser Rocket	Stan Barrett (US)	Edwards Air Force Base, California, USA	17 Dec 1979

* The published speed of Mach 1.0106 is not officially sanctioned by the USAF whose Digital Instrumented Radar was not calibrated or certified. The radar information was not generated by the vehicle directly but by an operator aiming the dish by means of a TV screen. A claim to 6 significant figures appears unjustifiable.

* Powered by a 34,000 bhp Rolls Royce Avon 302 jet engine.

The world's largest ambulance, the 59 ft, 18 m long Alligator Jumbulance used for conveying ill and disabled people on scenic tours (see p. 141).



Driving in reverse

Charles Creighton (1908–70) and James Hargis of Maplewood, Missouri, USA, drove their Ford Model A 1929 roadster in reverse from New York City 3340 miles 5375 km to Los Angeles, California on 26 July–13 Aug 1930 without once stopping the engine. They arrived back in New York in reverse on 5 Sept so completing 7180 miles 11555 km in 42 days. The highest average speed attained in any non-stop reverse drive exceeding 500 miles was achieved by Gerald Hoagland who drove a 1969 Chevrolet Impala 501 miles 806.2 km in 17 hr 38 min at Chemung Speed Dome, New York, USA on 9–10 July 1976 to average 28.41 mph 45.72 km/h.

Two Wheel Driving

The longest recorded distance for driving on 2 wheels by a professional stunt man is 5.6 miles 9.01 km in a Chevrolet Chevelle by Joie Chitwood, Jr on the Indianapolis Speedway, USA on 13 May 1978.

Oldest driver

Roy M. Rawlins (b. 10 July 1870) of Stockton, California, USA, was warned for driving at 95 mph 152 km/h in a 55 mph 88.5 km/h zone in June 1974. On 25 Aug 1974 he was awarded a California State licence valid till 1978 by Mr John Burratato, but Mr Rawlins died on 9 July 1975, one day short of his 105th birthday. Mrs Maude Tull of Inglewood, California, who took to driving aged 91 after her husband died, was issued a renewal on 5 Feb 1976 when aged 104. Britain's only recorded centenarian driver was Herbert Warren (1874–1975) of Whatlington, Norfolk, who drove a 1954 Standard 10. The oldest age at which anyone has passed the Department of Transport driving test has been 88 years 5 months by Mrs Harriet Emma Jack (née Morse) (b. 9 Dec

1887) on 18 May 1976 in Bognor Regis, West Sussex. The highest year number ever displayed on a Veteran Motorist's badge was '75' by Walter Herbert Weake, who started his accident free career in 1894 and drove daily until his death in 1969, aged 91.

Youngest driver

Instances of drivers have been recorded in HM Armed Forces much under 17 years. Mrs P. L. M. Williams (b. 3 Feb 1926), now of Risca, Gwent, as Private Patterson in the ATS drove a 5 ton truck in 1941 aged 15. Gordon John Graham of Clydebank, Strathclyde passed his advanced driving test aged 17 years 18 days on 20 Nov 1973.

Driving tests

The record for persistence in taking the Ministry of Transport's Learners' Test is held by Mrs Miriam Hargrave (b. 3 Apr 1908) of Wakefield, West Yorkshire, who failed her 39th driving test in eight years on 29 Apr 1970 after 'crashing' a set of red lights. She triumphed at her 40th attempt after 212 lessons on 3 Aug 1970. The examiner was alleged not to have known about her previous 39 tests. In 1978 she was reported to dislike right-hand turns. The world's easiest tests have been those in Egypt in which the ability to drive 6 m 19.64 ft forward and the same in reverse has been deemed sufficient. In 1979 it was reported that accurate reversing had been added between two rubber traffic cones. 'High cone attrition' soon led to the substitution of white lines. Mrs Fannie Turner (b. 1903) of Little Rock, Arkansas, USA passed her written test for drivers on her 104th attempt in October 1978.

Buses Earliest

The first municipal motor omnibus service in the world was

inaugurated on 12 Apr 1903 between Earshorne railway station and Mendis, East Sussex, England. A steam-powered bus named *Royal Power* ran between Gloucester and Cheltenham for 4 months in 1831.

Longest

The longest buses in the world are the 10.72 ton 10 870 kg, 76 ft 23.16 m long articulated buses, with 121 passenger seats and room also for 66 'strap-hangers' built by the Wayne Corporation of Richmond, Indiana, USA for use in the Middle East.

Longest route

The longest regularly scheduled bus route is by 'Across Australia Coach Lines', who inaugurated a regular scheduled service between Perth and Brisbane on 9 Apr 1980. The route is 5455 km 3389 miles taking 75 hr 55 min.

Caravans Longest journey

The longest continuous motor caravan journey is one of 143,716 miles 231 288 km by Harry B. Coleman and Peggy Larson in a Volkswagen Camper from 20 Aug 1976 to 20 Apr 1978 through 113 countries. Saburo Ouchi (b. 7 Feb 1942) of Tokyo, Japan drove 270 000 km 167,770 miles in 91 countries from 2 Dec 1969 to 10 Feb 1978.

Largest

The largest caravans built in Britain are the £300,000 'State Super Caravans', 18 m 59 ft 0½ in in length and 3.5 m 11 ft 5¾ in wide built by Coventry Steel Caravans Ltd of Newport Pagnell, Buckinghamshire since 1977.

Fastest

The world speed record for a caravan is 124.91 mph 201.02 km/h by an Alpha 14 towed by a Le Mans Aston Martin V8 saloon driven by Robin Hamilton at RAF Elvington, North Yorkshire on 14 Oct 1980.

Vehicles Most massive

The most massive vehicle ever constructed is the Marion eight-caterpillar crawler used for conveying Saturn V rockets to their launching pads at the John F. Kennedy Space Center, Florida (see Chapter 4, Most powerful rocket). It measures 131 ft 4 in 40 m by 114 ft 34.7 m and the two built cost \$12,300,000 (then £5,125,000). The loaded train weight is 8036 tons 8165 tonnes. Its windscreen wipers with 42 in 106 cm blades are the world's largest.

The most massive automotive land vehicle is 'Big Muskie' the 10,700 ton 10 890 tonnes mechanical shovel built by Bucyrus Erie for the Musk mine. It is 487 ft 148.43 m long; 151 ft 46.02 m wide and 222 ft 67.66 m high with a grab capacity of 325 tons.

The longest vehicle ever built is the Arctic Snow Train owned by the world famous wire-walker Steve McPeak (US). This 54 wheeled 572 ft 174.3 m long vehicle was built by R G Le Tourneau Inc of Longview, Texas for the US Army. Its gross train weight is 400 tons with a top speed of 20 mph 32 km/h and it was driven by a crew of 6 when used as an 'Overland Train' for the military. McPeak repaired it and every punctured wheel lone-handed in often sub-zero temperatures in Alaska. It generates 4,680 shp and has a capacity of 6522 Imperial gallons 29 648 litres.

Wrecker Most powerful

The world's most powerful wrecker is the Vance Corporation 25 ton 25.4 tonne 30 ft 9.14 m long Monster No. 2 stationed at Hammond, Indiana, USA. It can lift in excess of 160 tons 163 tonnes on its short boom.

Earth mover Largest

The world's largest earth mover is the Balderson 'Double Dude' plow (plough) harnessed to a Caterpillar SXS D9H 820 flywheel horsepower tractor. It can cast 14,185 yd³ 10 845 m³ per hour.

Dumper truck Largest

The world's largest dump truck is the Terex Titan 33-19 manufactured by the Terex Division of General Motors Corporation. It has a loaded weight of 539.9 tons 548.6 tonnes and a capacity of

312½ tons 317.5 tonnes. When tipping its height is 56 ft 17.06 m. The 16 cylinder engine delivers 3300 hp. The fuel tank holds 1300 Imperial gallons 5904.6 litres. It went into service in November 1974.

Tractor Largest

The world's largest tractor is the \$325,000 (then £162,500) 58 ton Northern Manufacturing Co 8-wheeled 16V-747. It is 14 ft 4.26 m tall and 20 ft 7 in 6.27 m wide with a 707.7 gal 3217 l tank. It was launched in October 1978.

Fire engine Most powerful

The world's most powerful fire appliance is the 860 hp 8-wheel Oshkosh firetruck used for aircraft fires. It can discharge 41,600 gal 190 000 l of foam through two turrets in just 150 sec. It weighs 59.0 tons 60 tonnes.

Ambulance Largest

The world's largest ambulances are the 18 m 59 ft 0½ in long articulated Alligator Jumbulances Mark VI, VII and VIII, operated by The Across Trust to convey the sick and handicapped on holidays and pilgrimages to the Continent. They are built by Van Hool of Belgium with Fiat engines, cost £176,000 and convey 44 patients and staff.

Load heaviest World

The greatest weight moved on wheels anywhere in the world is 2744 tonnes 2700 tons by Snellen-Vermeer and Sarens de Coster NV over 100 m 109 yd in Rotterdam, Netherlands on 4 Oct 1980. The object moved aboard the Heerema barge H-102 was a buoy 82 m 270 ft long and 50.3 m 165 ft in circumference. The train weight of the 1024 wheeled assembly was 3320 tonnes 3267.5 tons.

The world's record road load is one of a 1540 ton 1564 tonne methanol distillation unit at Madinat Al-Jubail Al-Sinaiyah, Saudi Arabia in March 1982 on a rig with a train weight of 1900 tons 1930 tonnes. It measures 27 m wide × 28 m long × 40 m high 88.5 × 91.8 × 131.2 ft.

Great Britain

The heaviest road load moved in the United Kingdom has been a 476 tonnes 468.4 tons 194 ft 59.13 m long Vacuum Distillation Column from Fawley Power Station to the Esso Refinery at Fawley by Mammoet-Econofreight on 24 July 1981. The gross weight of the load plus bogies (excluding tractors) was 696 tonnes 685 tons. The longest load moved on British roads has been a 192 ft 58.5 m 143 ton Belgian-made main wash column to ICI Wilton on 29 July 1976.

Tyres Largest

The world's largest tyres are manufactured in Topeka, Kansas by the Goodyear Co for giant dumper trucks. They measure 11 ft 6 in 3.50 m in diameter, weigh 12,500 lb 5670 kg and cost more than \$50,000 (£23,000). A tyre 17 ft 5.18 m in diameter is believed to be the limitation of what is practical.

Skid marks Longest

The longest recorded skid marks on a public road have been those 950 ft 290 m long left by a Jaguar car involved in an accident on the M1 near Luton, Bedfordshire, on 30 June 1960. Evidence given in the High Court case *Hurlock v. Inglis and others* indicated a speed 'in excess of 100 mph 160 km/h' before the application of the brakes. The skid marks made by the jet-powered *Spirit of America*, driven by Norman Craig Breedlove, after the car went out of control at Bonneville Salt Flats, Utah, USA, on 15 Oct 1964, were nearly 6 miles 9.6 km long. (See Jet-engined record, p. 140).

Amphibious vehicle circumnavigation

The only circumnavigation by an amphibious vehicle was achieved by Ben Carlin (Australia) (d. 7 Mar 1981) in an amphibious jeep 'Half-Safe'. He completed the last leg of the Atlantic crossing (the English Channel) on 24 Aug 1951. He arrived back in Montreal, Canada on 8 May 1958 having completed a circumnavigation of 39,000 miles 62 765 km over land and 9600 miles 15 450 km by sea and river. He was accompanied on the trans Atlantic stage by his ex-wife Elinore (US) and on the long trans Pacific stage (Tokyo to Anchorage) by Broyle Lafayette De-Mente (b. Missouri, 1928).

Snowmobiles

Richard and Raymond Moore and Loren Matthews drove their snowmobile 5876 miles 9456 km from Fairbanks, Alaska to Fenton, Michigan in 39 days from 3 Feb-13 Mar 1980.

Rubber-Powered Vehicle

The greatest distance achieved by an elastic-powered car is 482.25 m 527.4 yd by 'Olive-Goo' designed by a team from Japan on 24 Mar 1980. On 27 Mar 1981 she covered 100 m in 19.34 secs.

Tow Longest

The longest tow on record was one of 4759 miles 7 658 km from Halifax, Nova Scotia to Canada's Pacific Coast, when Frank J. Elliott and George A. Scott of Amherst persuaded 168 passing motorists in 89 days to tow their Model T Ford (in fact engine-less) to win a \$1000 bet on 15 Oct 1927.

Lawn mowers

The widest gang mower in the world is the 5 ton 60 ft 18.28 m wide 27 unit Big Green Machine used by the sod farmer Jay Edgar Frick of Monroe, Ohio. It mows an acre in 60 sec. On 28 Mar-1 Apr 1959 a Ransome *Matador* motor mower was driven for 99 hr non-stop over 375 miles 603 km Edinburgh to London. The greatest distance covered in the annual 12 hour Lawn Mower Race (under the rules of the BLMRA, the British Lawn Mower Racing Association) is 276 miles 84.12 km by Tony Hazelwood, Derek Bell, Tony Smith and Ray Kilminster at Woborough Green, W. Sussex on 21-22 June 1980.

MOTORCYCLES

Guinness Superlatives Ltd have published more specialist volumes entitled *The Guinness Book of Motor-Cycling Facts and Feats* by LJK Setright (£6.95) and *The Guinness Guide to Motorcycling* by Peter Carrick (£10.95).

Earliest (see also Chapter 12)

The earliest internal combustion-engined motorised bicycle was a wooden-framed machine built at Bad Cannstatt in Oct-Nov 1885 by Gottlieb Daimler (1834-1900) of Germany and first ridden by Wilhelm Maybach (1846-1929). It had a top speed of 12 mph 19 km/h and developed one-half of one horsepower from its single-cylinder 264 cc four-stroke engine at 700 rpm. Known as the 'Einspur', it was lost in a fire in 1903. The first motorcycles of entirely British production were the 1046 cc Holden flat-four and the 2¾ hp Clyde single both produced in 1898. The earliest factory which made motorcycles in quantity was opened in 1894 by Heinrich and Wilhelm Hildebrand and Alois Wolfmüller at Munich, West Germany. In its first two years this factory produced over 1000 machines, each having a water-cooled 1488 cc twin-cylinder four-stroke engine developing about 2.5 bhp at 600 rpm—the highest capacity motor cycle engine ever put into production.

Fastest road machine

The highest speed returned in an independent road test for a catalogued road machine is 154.2 mph 248.1 km/h for a Dunstall Suzuki GS 1000 CS.

Fastest racing machine

There is no satisfactory answer to the identity of the fastest track machine other than to say that the current Kawasaki, Suzuki and Yamaha machines have all been geared to attain speeds marginally in excess of 300 km/h 186.4 mph under race conditions.

Duration record

The longest time a solo motorcycle has been kept in nonstop motion is 500 hr by Owen Fitzgerald, Richard Kennett and Don Mitchell who covered 8432 miles 13 570 km in Western Australia on 10-31 July 1977.

Most on One Machine

On 20 Apr at Santa Pod Raceway, Podington, Bedfordshire, England, the Magnificent Seven Stunt Team were augmented to 22 riders and covered 440 yd 402.3 m on an adapted Kawasaki Z 900.

Most expensive

The most expensive road motorcycle available in Britain is the US 1338 cc Harley Davidson FLT Classic which retailed in May 1982 for £5999 (incl. VAT). In June 1980 a 1912 Henderson Model A was auctioned in the US for \$18,000 (then £7825).

Round Britain

Michael T. Parry of Great Missenden, Buckinghamshire riding a BMW visited all the 62 mainland counties of Great Britain in 38 hours on 16-19 Aug 1980.

BICYCLES**Earliest**

The first design for a machine propelled by cranks and pedals, with connecting rods has been attributed to Leonardo da Vinci (1452-1519), or one of his pupils, dated c. 1493. The earliest such design actually built was in 1839-40 by Kirkpatrick Macmillan (1810-78) of Dumfries, Scotland. It is now in the Science Museum, Kensington and Chelsea, Greater London.

Longest

The longest true tandem bicycle ever built (i.e. without a third stabilizing wheel) is one of 20.40 m 66 ft 11 in for 35 riders built by the Pedaalstompers Westmalle of Belgium. They rode c. 60 cm 195 ft in practice on 20 Apr 1979. The machine weighs 1100 kg 2425 lb.

Smallest

The world's smallest wheeled rideable bicycle is one with 2½ in 5.4 cm wheels weighing 2 lb 900 g built and ridden by Charlie Charles at Circus Circus Hotel, Las Vegas, Nevada, USA.

Largest

A classic Ordinary bicycle with wheels of 64 in 162.5 cm diameter front and 20 in 50.8 cm back was built c. 1886 by the Pope Manufacturing Co of Massachusetts, USA. It is now owned by Paul Niquette of Connecticut.

Fastest World and British

The world speed records for human powered vehicles are 58.64 mph 94.37 km/h (single rider) by Dave Grylls at the Ontario Speedway, California on 27 Oct 1980; and 62.92 mph 101.25 km/h (multiple riders) by Dave Grylls and Leigh Barczewski at the Ontario Speedway on 4 May 1980. A British 200 m record was set by S. Poulter in 'Poppy Flyer', in 9.10 sec at Greenham Common, Berkshire on 2 Aug 1981.

Unicycle records

The tallest unicycle ever mastered is one 101 ft 9 in 31.01 m tall ridden by Steve McPeak (with a safety wire or mechanic suspended to an overhead crane) for a distance of 376 ft 114.6 m in Las Vegas in October 1980. The freestyle riding of even taller unicycles (that is without any safety harness) must inevitably

3. RAILWAYS

Guinness Superlatives publish railway records in much greater detail in the more specialist publication *Guinness Book of Rail Facts and Feats* 3rd edition (price £6.95).

TRAINS**Earliest**

Railed trucks were used for mining as early as 1550 at Leberthal, Alsace, and at the Broseley colliery, Shropshire in October 1605, but the first self-propelled locomotive ever built was by Richard Trevithick (1771-1833) for the 3 ft gauge plateway at Coalbrookdale, Shropshire in 1803. The first known to have run was his second locomotive at Penydarren, Mid Glamorgan, Wales on 22 Feb 1804. The earliest established railway to have a steam-powered locomotive was the Middleton Colliery Railway, set up by an Act of 9 June 1758 running between Middleton Colliery and Leeds Bridge, Yorkshire. This line went over to the use of steam locomotives built by Matthew Murray (1765-1826), in 1812. The Stockton and Darlington Railway, Cleveland, which ran from Shildon through Darlington to Stockton, opened on 27 Sept 1825. The 7 ton/tonne *Locomotion* could pull 48 tons 48.7 tonnes at a speed of 15 mph 24 km/h. It was designed and driven by George Stephenson (1781-1848). The first regular steam passenger run was inaugurated over a one mile section (between Bogshole Farm and South Street) on the 6¼ mile 10.05 km track between Canterbury and Whitstable, Kent, on 3 May 1830 hauled by the engine *Invicta*. The first electric railway was Werner von Siemens's 328 yd 300 m oval Berlin electric track opened for the Berlin Trades' Exhibition on 31 May 1879.



above: The ultimate in long tandems—the 35-man quintotrigintapede built in Belgium (see p. 142). *above right:* Nearing the mile a minute human-powered barrier, David Grylls (USA), who attained 58.64 mph 94.37 km/h in his record-breaking *Vector* (see p. 142).

left: The most intimate tandem 19 cm 7.48 in tall with 12 cm 4.7 in diameter wheels, built by M. Puyou of France. His wife is riding pillion.

lead to serious injury or fatality. Robert Neil 'Bob' McGuinness (b. 1951) unicycled the 6400 km 3976 miles across Canada from Halifax to Vancouver in 79 days on 6 June–24 Aug 1978. Johnnie Severin of Atwater, California, USA set a record for 100 miles 160.9 km in 9 hr 20 min 53 sec on 10 Jan 1981. The sprint record from a standing start over 100 metres is 14.89 sec by Floyd Grandall of Pontiac, Michigan, USA, in Tokyo, Japan on 24 Mar 1980.

Place to place

Brian Davis, 33 of Tillicoultry, Clackmannan, Scotland rode 901 miles 1450 km from Land's End to John O'Groats on 16 May to 4 June 1980 in 19 days 1 hr 45 min.

Penny-farthing record

The record for riding from Land's End to John O'Groats on Ordinary bicycles, more commonly known in the 1870s as Penny-farthings, is 10 days 7 hr 12 min by James Richard Moir, 37 of St Leonards-on-Sea, East Sussex on 5–15 June 1977.

Underwater Cycling

Thirty-two certified Scuba divers in 60 hours on 27–29 Nov 1981 rode a submarine tricycle 64.96 miles 104.54 km on the bottom of Amphi High School pool, Tuscon, Arizona to raise money for a charity.

A progressive table of railway speed records since 1829 was published in the 23rd edition on page 141.

Fastest

The world rail speed record was set up by the US Federal Railroad Administration LIMRV (Linear Induction Motor Research Vehicle) built by the Garrett Corporation on the 6.2 mile 9.97 km long Pueblo test track, Colorado, USA when a speed of 254.76 mph 410 km/h was attained on 14 Aug 1974. The highest speed recorded on any national rail system is 236 mph 380 km/h by the French SNCF high speed train T6V-PSE on trial near Tonnerre on 26 Feb 1981. The TGV (Train à Grande Vitesse) inaugurated on 27 Sept 1981 is in the process of reducing its scheduled time for the Paris–Lyon run of 510 km 317 miles from 2 hr 14 min to 2 hr exactly, so averaging 255 km/h 158.5 mph.

Steam

The highest speed ever ratified for a steam locomotive was 126 mph 202 km/h over 440 yd 402 m by the LNER 4-6-2 No. 4468 *Mallard* (later numbered 60022), which hauled seven coaches weighing 240 tons 243 tonnes gross, down Stoke Bank, near Essendine, between Grantham, Lincolnshire, and Peterborough, Cambridgeshire, on 3 July 1938. Driver Joseph Duddington was at the controls with Fireman Thomas Bray. The engine suffered severe damage. On 12 June 1905 a speed of 127.06 mph 204.48 km/h was claimed for the 'Pennsylvania Special' near Ada, Ohio, USA but has never been accepted by leading experts.

United Kingdom

The fastest point-to-point schedule in Britain is that from Paddington to Bristol, Parkway on British Rail's Western Region HST Service at 103.15 mph 166 km/h in 65 min over 111.75 miles 179.8 km.

Great Britain

British Rail inaugurated their HST (High Speed Train) daily services between London–Bristol and South Wales on 4 Oct 1976. On 10 Apr 1979 one covered the 94 miles 151.2 km between Paddington, London, and Chippenham, Wiltshire, in 50 min 31 sec for a start-to-stop average of 111.64 mph 179.67 km/h. The peak speed is 125 mph 201 km/h. The electric British Rail APT-P (Advanced Passenger Train-Prototype) attained 160 mph 257.5 km/h, between Glasgow and Carlisle on 20 Dec 1979.

Longest Non-stop

The longest run on British Rail without any advertised stop is the Night Motorail Service from Inverness to Euston inaugurated on 21 May 1973. The distance is 567.75 miles 913.7 km and the time taken is 11 hr 4 min. The longest passenger journey without a stop is the re-inaugurated Flying Scotsman's 268.5 mile 432.1 km run from Kings Cross to Newcastle en route to Edinburgh.



above: The French SNCF high speed train on the Paris-Lyon run which is now averaging more than 150 mph 240 km/h (see p. 143). (Philippine Productions)



left: The world's gentlest gradient or perhaps Britain's most obtuse summit. The unique 1 in 14,400 sign in Hampshire, England (see p. 145).

below: The world's steepest rail gradient between Chedde and Servoz on the Chamonix line in France (see p. 145).



Most powerful World

The world's most powerful steam locomotive, measured by tractive effort, was No. 700, a triple articulated or triplex 2-8-8-4, the Baldwin Locomotive Co 6-cylinder engine built in 1916 for the Virginian Railroad. It had a tractive force of 166,300 lb 75 432 kg working compound and 199,560 lb 90 518 kg working simple.

Probably the heaviest train ever hauled by a single engine was one of 15,300 tons 15 545 tonnes made up of 250 freight cars stretching 1.6 miles 2.5 km by the *Mat H. Shay* (No. 5014), a 2-8-8-8-2 engine which ran on the Erie Railroad from May 1914 until 1929.

Longest freight train

The longest and heaviest freight train on record was one 3.5 miles 5.6 km in length consisting of 450 coal cars with three 3600 hp diesels pulling and five more in the middle on the Jaeger to Williamson, West Virginia, stretch on the Norfolk and Western Railway on 25 Oct 1967. The total weight was 39,709 tons 40 358 tonnes.

Greatest load

The heaviest single pieces of freight ever conveyed by rail are limited by the capacity of the rolling stock. The world's strongest rail carrier with a capacity of 807 tonnes is the 336 tonne 36 axle 92 m 301 ft 10 in long 'Schnabel' built for a US railway by Krupp, W. Germany, in March 1981.

The heaviest load carried by British Rail was a 122 ft 37.1 m long boiler drum, weighing 275 tons 279 tonnes which was carried from Immingham Dock to Killinghome, Humberside, in September 1968. They also move their own rails in lengths of 300 feet 91.44 m.

The heaviest load ever moved on rails is the 10,700 ton Church of the Virgin Mary built in 1548 in the village of Most, Czechoslovakia, in October-November 1975 because it was in the way of coal deposits. It was moved 800 yd 730 m at 0.0013 mph 0.002 km/h over 4 weeks at a cost of £9 million.

TRACKS

Longest line

The world's longest run is one of 9438 km 5864 1/2 miles on the Trans Siberian line from Moscow to Nakhodka, USSR, in the Soviet Far East. There are 97 stops in the journey which takes 8 days 4 hr 25 min. The Baykal-Amur Magistral (BAM) northern line, begun with forced labour in 1938, is expected to be open in 1983 and will cut 500 km 310 miles off the route round the southern end of Lake Baykal. A total of 10,000 million ft³ 283 million m³ of earth has to be moved and 3700 bridges built in this £8000 million project.

Longest straight

The longest straight in the world is on the Commonwealth Railways Trans Australian line over the Nullarbor Plain from Mile 496 between Nurina and Loongana, Western Australia, to Mile 793 between Ooldea and Watson, South Australia, 297 miles 478 km dead straight although not level. The longest straight on British Rail is the 18 miles 29 km between Barlby and Staddlethorpe Junctions on the Selby, North Yorkshire, to Kingston-upon-Hull, Humberside, line.

Widest and Narrowest

The widest gauge in standard use is 5 ft 6 in 1,676 m. This width is used in Spain, India, Pakistan, Bangladesh, Sri Lanka, Argentina and Chile. In 1885 there was a lumber railway in Oregon, USA, with a gauge of 8 ft 2.4 m. The narrowest gauge in use on public railways is 1 ft 3 in 0.381 m on the Ravenglass & Eskdale Railway, Cumbria (7 miles 11.2 km) and the Romney, Hythe & Dymchurch line in Kent (14 miles 22.53 km). 'Le Chemin de fer interet locale' between Muir de Bretagne and Caurel, Cote du Nord, France has a gauge of 31 cm 12.2 in and runs for 5 km 3.1 miles.

Highest World

The highest standard gauge (4 ft 8 1/2 in 1,43 m) track in the world is on the Peruvian State Railways at La Cima, on the Morococha Branch at 15,806 ft 4817 m above sea-level. The highest point on the main line is 15,688 ft 4781 m in the Galera tunnel.

Highest point in Britain
The highest point of the British Rail system is at the pass of Dera-
machon on the former Perth-Inverness border, where the track
reaches an altitude of 1484 ft 452 m above sea-level. The highest
railway in Britain is the Snowdon Mountain Railway, which
rises from Llanberis, Gwynedd, to 3493 ft 1064 m above sea-
level, just below the summit of Snowdon (Yr Wyddfa). It has a
gauge of 2 ft 7½ in 800 mm.

Lowest point
The lowest point on British Rail is in the Severn Tunnel—144 ft
43.8 m below sea-level.

Steepest gradient World

The world's steepest standard gauge gradient by adhesion is
1:11 between Chedde and Servoz on the metre gauge SNCF Cha-
monix line, France.

Steepest Britain

The steepest sustained adhesion-worked gradient on main line
in the United Kingdom is the two-mile Lickey incline of 1:37.7
in Hereford and Worcester. From the tunnel bottom to James
Street, Liverpool, on the former Mersey Railway, there is a
stretch of 1:27; and between Folkestone Junction and Harbour a
mile 1,6 km of 1:30.

Slightest gradient

The slightest gradient posted on the British Rail system is one in-
dicated as 1 in 14,400 between Pirbright Junction and Farnbo-
rough, Hampshire. This could be described alternatively as
England's most obtuse summit.

Busiest rail system

The world's most crowded rail system is the Japanese National
Railways, which by 1981 carried 18,700,000 passengers daily.
Professional pushers are employed on the Tōkyō Service to
squeeze in passengers before the doors can be closed. Among
articles lost in 1980 were 543,883 umbrellas, 346,423 clothing
items, 194,712 spectacles and hats and also 3 persons' ashes and
29 Buddhist memorial tablets.

Longest All Stations

Alan M. Witton (b. 1943) of Chorlton, Manchester visited every
open British Rail station (2362) in a continuous tour for charity
of 16,592¾ miles 26 703 km in 27,136 minutes on 13 July–28
Aug 1980.

John Geraghty, 18 covered Ireland's entire 5098 mile 8204 km
network on a CIE Rambler ticket in 135¼ hr for charity on 18–
25 July 1981.

Most Countries in 24 hours

The record number of countries travelled through entirely by
train in 24 hours is 10 by W. M. Elbers and R. G. Scholten on
29–30 July 1981. They started in West Germany via Nether-
lands, Belgium, Luxembourg, France, Switzerland, Liechten-
stein, Austria, Italy arriving in Yugoslavia 23 hr 34 min later.

Fastest pumped Railcars

The fastest time set in the now annual races at Port Moody, Brit-
ish Columbia, Canada over 300 m 985 ft by a 5 man team (1
pusher, 4 pumpers) is 34.08 sec on 22 June 1980.

Longest Journey

The longest train journey in the world is the 9 day 2 hour 'odys-
sey' from Lisbon, Portugal to Khabarovsk in Eastern USSR via
Omsk.

The longest journey on the British Rail system is from Penzance,
Cornwall to Wick, Caithness, Scotland, a round trip of 1842
miles 2964 km.

STATIONS

Largest World

The world's largest railway station is Grand Central Terminal,
Park Avenue and 43rd Street, New York City, NY, USA, built
1903–13. It covers 48 acres 19 ha on two levels with 41 tracks on
the upper level and 26 on the lower. On average more than 550
trains and 180,000 people per day use it, with a peak of 252,288
on 3 July 1947.



Ireland's John Geraghty, 18, who covered the entire Republic's
5098 mile 8204 km rail network in 135¼ hours.

Great Britain

The largest railway station in extent on the British Rail system is
the 17-platform Clapham Junction, London, covering 27¾
acres 11,22 ha with a total face of 11,185 ft 3409 m. The station
with the largest number of platforms is Waterloo, London (24½
acres 9,9 ha), with 21 main line and two Waterloo and City Line
platforms, with a total face of 15,352 ft 4679 m. Victoria Station
(21¼ acres 8,80 ha) with 17 platforms has, however, a total face
length of 18,412 ft 5611 m.

Oldest

The oldest station in the world is Liverpool Road Station, Man-
chester, England first used on 15 Sept 1830.

Busiest

The busiest railway junction in Great Britain is Clapham Junc-
tion, Wandsworth, Greater London, on the Southern Region of
British Rail, with an average of 2250 trains passing through each
24 hr (May 1982).

Highest

The highest station in the world is Condor, Bolivia at 15,705 ft
4786 m on the metre gauge Rio Mulato to Potosi line. The
highest passenger station on British Rail is Corroeur, Highland,
at an altitude of 1347 ft 410,5 m above sea-level.

Waiting rooms

The world's largest waiting rooms are the four in Peking Sta-
tion, Chang'an Boulevard, Peking, China, opened in September
1959, with a total standing capacity of 14,000.

Longest platform

The longest railway platform in the world is the Khargpur plat-
form, West Bengal, India, which measures 2733 ft 833 m in
length. The State Street Center subway platform staging on
'The Loop' in Chicago, Illinois, USA, measures 3500 ft 1066 m
in length.

The longest platform in the British Rail system is the 1977 ft 4 in
602,69 m long platform at Gloucester. The figure of 1981 ft
603,8 m previously published for Colchester, Essex has proved
to be exaggerated by 61 ft 18,59 m.

UNDERGROUND RAILWAYS

Most extensive

The earliest (first section opened 10 Jan 1863) and one of the
most extensive underground or rapid transit railway systems of
the 67 in the world is that of the London Transport Executive,
with 260 miles 418 km of route, of which 81 miles 130 km is
bored tunnel and 20 miles 32 km is 'cut and cover'. This whole
system is operated by a staff of 11,300 serving 277 stations. The
500 trains comprising 4353 cars carried 559,000,000 passengers
in 1980. The greatest depth is 221 ft 67,3 m near Hampstead on
the Northern Line. The longest journey without a change is
Epping to West Ruislip—34.1 miles 54,8 km. The record for
touring the 277 stations is 17 hr 37 min by C. M. Mulvany of
London on 3 Dec 1981.

The subway with most stations in the world is the New York City Transport Authority (first section opened on 27 Oct 1904) with a total of 231.73 route miles 372.93 km and 1,096,006,529 passengers in 1979. The 462 stations are closer set than London's. The record for travelling the whole system was 21 hr 8 min by Mayer Wiesen and Charles Emerson on 8 Oct 1973.

Busiest

The world's busiest metro system is that in Greater Moscow with as many as 6½ million passengers per day. It has 114 stations and 184 km 114 miles of track. The record transit is 8 hr 18 min 21 sec by Eric Rudkin of Derbyshire on 20 May 1980.

MODEL RAILWAYS

The non-stop duration record for a model train (loco plus 6 coaches, is 864 hr 30 min from 1 June–7 July 1978, covering 678 miles 1091 km, organised by Roy Catton at 'Pastimes' Toy Store, Moxborough, S. Yorkshire. The longest recorded run by a model steam locomotive is 144 miles 231.7 km in 27 hr 18 mins by the 7¼ inch 18.4 cm gauge 'Winifred' built in 1974 by Wilf Grove at Thames Ditton, Surrey on 8–9 Sept 1979. 'Winifred' works on 80 lb/in² 5.6 kg/cm² pressure and is coal-fired with a 2¼ in 54 mm bore cylinder and a 3½ in 79 mm stroke. The longest train ever operated was one of 750 cars, plus one caboose, pulled by 10 Lionel engines on a 'O' gauge track, by Stewart E. Roberts at the Rickenbacker Air Force Base in Columbus, Ohio, USA on 26 July 1980 when it traversed its own length (approx 685 ft 208.7 m).

TRAMS

Longest tram journey

The longest tramway journey now possible is from Krefeld St Tönis to Witten Annen Nord, W. Germany. With luck at the 8 inter-connections the 105.5 km 65.5 mile trip can be achieved in 5½ hr. By late 1977 there were still some 315 tramway systems surviving of which the longest is that of Leningrad, USSR with 2500 cars on 53 routes.

Oldest

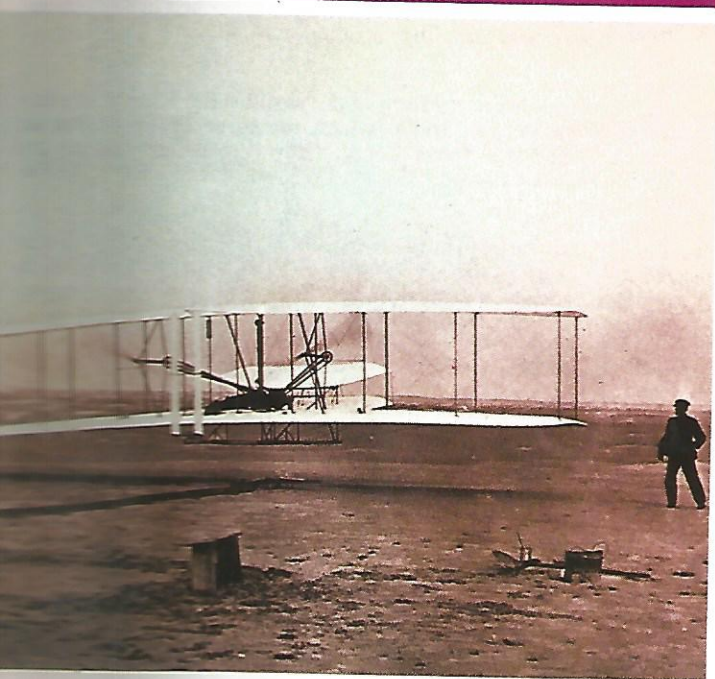
The oldest trams in revenue service in the world are Motor cars 1 and 2 of the Manx Electric Railway dating from 1893.

MONORAIL

Highest speed

The highest speed ever attained on rails is 3090 mph 4972 km/h

Wilbur and Orville Wright, America's pioneering aviation geniuses. They made their first ever flights in stiff collars and ties. They were descended from a family of Wrights from Essex, England. (Air and Space Museum, Washington)



Mach 4.1) by an unmanned rocket-powered sled on the 6.62 mile 10.65 km long captive track at the US Air Force Missile Development Center at Holloman, New Mexico, USA, on 19 Feb 1959. The highest speed reached carrying a chimpanzee is 1295 mph 2084 km/h.

The highest speed attained by a tracked hovercraft is 411 km/h 255.3 mph by the jet-powered *L'Aérotrain 02*, invented by Jean Bertin. An experimental magnetically levitated Japanese National Railway train on a test track near Miyazaki reached 517 km/h 321 mph on 21 Dec 1979.

4. AIRCRAFT

Guinness Superlatives has published aircraft records in much greater detail in the specialist publication *Guinness Book of Air Facts and Feats* (3rd edition) (price £6.50).

Note—The use of the Mach scale for aircraft speeds was introduced by Prof. Ackeret of Zurich, Switzerland. The Mach number is the ratio of the velocity of a moving body to the local velocity of sound. This ratio was first employed by Dr Ernst Mach (1838–1916) of Vienna, Austria in 1887. Thus Mach 1.0 equals 760.98 mph 1224.67 km/h at sea-level at 15° C, and is assumed, for convenience, to fall to a constant 659.78 mph 1061.81 km/h in the stratosphere, i.e. above 11,000 m 36,089 ft.

EARLIEST FLIGHTS

World

The first controlled and sustained power-driven flight occurred near the Kill Devil Hill, Kitty Hawk, North Carolina, USA, at 10.35 a.m. on 17 Dec 1903, when Orville Wright (1871–1948) flew the 12 hp chain-driven *Flyer I* for a distance of 120 ft 36.5 m at an airspeed of 30 mph 48 km/h, a ground speed of 6.8 mph 10.9 km/h and an altitude of 8–12 ft 2.5–3.5 m for about 12 sec watched by his brother Wilbur (1867–1912) 4 men and a boy. Both brothers, from Dayton, Ohio, were bachelors because, as Orville put it, they had not the means to 'support a wife as well as an aeroplane'. The *Flyer* is now in the National Air and Space Museum at the Smithsonian Institution, Washington DC.

The first hop by a man-carrying aeroplane entirely under its own power was made when Clément Ader (1841–1925) of France flew in his *Eole* for about 50 m 164 ft at Armainvilliers, France, on 9 Oct 1890. It was powered by a lightweight steam engine of his own design which developed about 20 hp (15 kW). Richard William Pearce (1877–1953) flew (in uncontrolled flight) for at least 50 yd 45 m along the Main Waitohi Road, South Canterbury, New Zealand in a self-built petrol-engined monoplane on a date which on best evidence was 31 Mar 1903. The earliest 'rational design' for a flying machine, according to the Royal Aeronautical Society, was that published by Emanuel Swedenborg (1688–1772) in Sweden in 1717.

Great Britain

The first officially recognised flight in the British Isles was made by the US citizen Samuel Franklin Cody (1861–1913) who flew 1390 ft 423 m in his own biplane at Farnborough, Hampshire, on 16 Oct 1908. Horatio Frederick Phillips (1845–1924) almost certainly covered 500 ft 152 m in his Phillips II 'Venetian blind' aeroplane at Streatham, in 1907. The first resident British citizen to fly in a powered 'plane was Griffith Brewer (1867–1948), as a passenger of Wilbur Wright, on 8 Oct 1908 at Auvours, France.

Cross-Channel

The earliest cross-Channel flight by an aeroplane was made on Sunday, 25 July 1909 when Louis Blériot (1872–1936) of France flew his *Blériot XI* monoplane, powered by a 23 hp Anzani engine, 26 miles 41.8 km from Les Baraques, France, to Northfall Meadow near Dover Castle, England, in 36½ min, after taking off at 4.41 a.m.

Jet-engined World

Proposals for jet propulsion date back to Captain Marconnet (1909) of France, and Henri Coanda (1886–1972) of Romania, and to the turbojet proposals of Maxime Guillaume in 1921. The earliest tested run was that of the British Power Jets Ltd's experimental WU (Whittle Unit) on 12 Apr 1937, invented by Flying Officer (now Air Commodore Sir) Frank Whittle (b. Coventry, 1 June 1907), who had applied for a patent on jet propulsion in 1930. The first flight by an aeroplane powered by a

engine was made by the Heinkel He 178, piloted by Flugkapitan Erich Warwitz, at Marienheide, Germany, on 27 Aug 1938. It was powered by a Heinkel He 53b engine (834 lb 374 kg as installed with long tailpipe) designed by Dr Hans 'Pabst' von Ohain and first tested in August 1937.

Great Britain

The first British jet flight occurred when Fl Lt P. E. G. 'Jerry' Sayer, OBE (k. 1942) flew the Gloster-Whittle E.28/39 (wing span 29 ft 8.84 m, length 25 ft 3 in 7.70 m) fitted with an 860 lb 390 kg st Whittle W-1 engine for 17 min at Cranwell, Lincolnshire, on 15 May 1941. The maximum speed was c. 350 mph 560 km/h.

Supersonic flight

The first supersonic flight was achieved on 14 Oct 1947 by Capt. (later Brig.-Gen) Charles ('Chuck') Elwood Yeager, USAF retd (b. 13 Feb 1923), over Edwards Air Force Base, Muroc, California, USA, in a Bell XS-1 rocket plane ('Glamorous Glennis'), with Mach 1.015 (670 mph 1078 km/h) at an altitude of 42,000 ft 12 800 m. The first British aircraft to attain Mach 1 in a dive was the de Havilland D. H. 108 tailless research aircraft on 6 Sept 1948, piloted by John Derry.

Trans-Atlantic

The first crossing of the North Atlantic by air was made by Lt-Cdr (later Rear Admiral) Albert Cushing Read (1887–1967) and his crew (Stone, Hinton, Rodd, Rhoads and Breese) in the 84 knot 155 km/h US Navy/Curtiss flying-boat NC-4 from Trepassy Harbour, Newfoundland, via the Azores, to Lisbon, Portugal, on 16–27 May 1919. The whole flight of 4717 miles 7591 km originating from Rockaway Air Station, Long Island, NY on 8 May, required 53 hr 58 min, terminating at Plymouth, England, on 31 May.

The Newfoundland–Azores flight of 1200 miles 1930 km took 15 hr 18 min at 81.7 knots 151.4 km/h.

Non-stop

The first non-stop trans-Atlantic flight was achieved 18 days later from 4.13 p.m. GMT on 14 June 1919, from Lester's Field, St John's, Newfoundland, 1960 miles 3154 km to Derrygimla bog near Clifden, County Galway, Ireland, at 8.40 a.m. GMT, 15 June, when the pilot, Capt John William Alcock, DSC (1892–1919), and the navigator Lt Arthur Whitten Brown (1886–1948) flew across in a Vickers Vimy, powered by two 360 hp Rolls-Royce Eagle VIII engines. Both men were created civil KBE's on 21 June 1919 when Alcock was aged 26 years 227 days, and shared a *Daily Mail* prize of £10,000.

Solo

The 79th man to achieve a trans-Atlantic flight but the first to do so solo was Capt (later Brig) Charles Augustus Lindbergh (Hon AFC) (1902–74) who took off in his 220 hp Ryan monoplane 'Spirit of St. Louis' at 12.52 p.m. GMT on 20 May 1927 from Roosevelt Field, Long Island, NY, USA. He landed at 10.21 p.m. GMT on 21 May 1927 at Le Bourget airfield, Paris, France. His flight of 3610 miles 5810 km lasted 33 hr 29½ min and he won a prize of \$25,000 (then £5300).

Most Flights

John M. Winston, a senior British Airways Flight Engineer, flew 1277 trans-Atlantic flights from 10 May 1947 to 14 Dec 1978—a total of 20,100 hr.

Trans-Pacific

The first non-stop Pacific flight was by Major Clyde Pangborn and Hugh Herndon in the Bellanca cabin plane *Miss Veedol* from Sabishiro Beach, Japan 4558 miles 7335 km to Wenatchee, Washington, USA in 41 hr 13 min on 3–5 Oct 1931. (For earliest crossing see 1924 flight below).

Circumnavigational flights

Strict circumnavigation requires passing through two antipodal points thus with a minimum distance of 24,859.75 miles 40 007.89 km. The FAI permits flights which exceed the length of the Tropic of Cancer or Capricorn viz 22,858.754 miles 36 787.599 km.

The earliest such flight of 26,345 miles 42 380 km was by two US Army Douglas DWC amphibians in 57 'hops'. The Chicago was piloted by Lt Lowell H. Smith and Lt Leslie P. Arnold and the New Orleans was piloted by Lt Erik H. Nelson and Lt John Harding between 6 Apr and 28 Sept 1924 beginning and ending at Seattle, Washington, USA.

The earliest solo claim was by Wiley Hardemann Post (1898–1935) (US) in the Lockheed Vega 'Winnie Mae' starting and finishing at Floyd Bennett Field, New York City on 15–22 July 1933 in 10 'hops'. The distance of 15,596 miles 25 099 km with a flying time of 115 hr 36 min was however at too high a latitude to qualify.

The first non-stop round-the-world flight completed on 2 Mar 1949 was made by the USAF's Boeing B-50 Superfortress *Lucky Lady II* piloted by Capt James Gallagher from Carswell AFB, Texas in 94 hr 1 min. The aircraft was refuelled 4 times on its 23,452 mile 37 742 km flight.

The fastest flight has been the non-stop eastabout flight of 45 hr 19 min by three flight-refuelled USAF B-52's led by Maj-Gen Archie J. Old Jr. They covered 24,325 miles 39 147 km on 16–18 Jan 1957 finishing at March Air Force Base, Riverside, California, having averaged 525 mph 845 km/h with four in-flight refuellings by KC-97 aerial tankers.

The first circum-polar flight was solo by Capt Elgen M. Long, 44, in a Piper Navajo on 5 Nov–3 Dec 1971. He covered 38,896 miles 62 597 km in 215 flying hours. The cabin temperature sank to –40°C –40°F over Antarctica.

Circumnavigation Smallest aircraft

The smallest aircraft to complete a circumnavigation is the 20 ft 11 in 6.38 m single-engined 180 hp Thorp T-18 built in his garage by its pilot Donald P. Taylor of Sage, California. His 26,190 mile 42 148 km flight in 37 stages took 176 flying hours ending at Oshkosh, Wisconsin on 30 Sept 1976.

Largest wing span

The aircraft with the largest wing span ever constructed is the \$40 million Hughes H.4 *Hercules* flying-boat, which was raised 70 ft 21.3 m into the air in a test run of 1000 yd 914 m, piloted by Howard Hughes (1905–76), off Long Beach Harbor, California, USA, on 2 Nov 1947. The eight-engined 190 ton 193 tonnes aircraft had a wing span of 319 ft 11 in 97.51 m and a length of 218 ft 8 in 66.64 m and never flew again. In a brilliant engineering feat she was moved bodily by Goldcoast Corp aided by the US Navy barge crane YD-171 on 29 Oct 1980 to her final resting place.

Heaviest

The highest recorded gross take off weight of any aircraft has been 379.9 tons 386.0 tonnes in the case of a Boeing 747-200B 'Jumbo' jet during certification tests of its Pratt & Whitney JT9D-7Q engines on 23 May 1979.

Solar Powered

The solar-powered *Solar Challenger*, designed by a team led by Dr Paul MacCreedy, was flown for the first time entirely under solar power on 20 Nov 1980. On 7 July 1981, piloted by Steve Pracek (USA), the *Solar Challenger* became the first aircraft of this category to achieve a crossing of the English Channel. Taking off from Clergy-Pontaise near Paris, the 180 mile 290 km journey to Manston, Kent was completed in 5½ hr. The aircraft has a wingspan of 47 ft 14.3 m.

Smallest

The smallest aeroplane ever flown is the Stits *Skybaby* biplane, designed and built by Ray Stits at Riverside, California, USA, and first flown by Robert H. Starr on 26 May 1952. It was 9 ft 10 in 3 m long, with a wing span of 7 ft 2 in 2.18 m, and weighed 452 lb 205 kg empty. It was powered by an 85 hp Continental C85 engine, giving a top speed of 185 mph 297 km/h.

Bombers Heaviest

The world's heaviest bomber is the eight-jet swept-wing Boeing B-52H *Stratofortress*, which has a maximum take-off weight of 488,000 lb (217.86 tons 221.35 tonnes). It has a wing span of 185 ft 56.38 m and is 157 ft 6¾ in 48.02 m in length, with a

The shortest scheduled flight in the world is that by Loganair between the Orkney Islands of Westray and Papa Westray which has been flown with Britten-Norman Islander twin-engined 10-seat transports since September 1967. Though scheduled for 2 min, in favourable wind conditions it has been accomplished in 58 sec by Capt Andrew D. Alston.

The world's fastest operational bombers are the French Dassault *Mirage IV*, which can fly at Mach 2.2 (1450 mph 2333 km/h) at 36,000 ft 11 000 m; the American General Dynamics FB-111A, with a maximum speed of Mach 2.5; and the Soviet swing-wing Tupolev Tu-26 known to NATO as 'Backfire', which has an estimated over-target speed of Mach 2.0 but which may be as fast as Mach 2.5 and a combat radius of up to 3570 miles 5745 km.

Gary W. Rovetto of Island Air on 21 Mar 1980 flew on the scheduled flight from Center Island to Decatur Island, Washington, USA in 41 sec.

The highest capacity jet airliner is the Boeing 747 'Jumbo Jet', first flown on 9 Feb 1969 (see Heaviest aircraft) and has a capacity of from 385 to more than 500 passengers with a maximum speed of 602 mph 969 km/h. The Stretched Upper Deck option announced during 1980 allows an extra 32 passengers to be carried. The first of these extended capacity aircraft are scheduled to enter service in 1983. Its wing span is 195.7 ft 59.64 m and its length 231.8 ft 70.7 m. It entered service on 22 Jan 1970.

The largest ever British aircraft was the experimental Bristol Type 167 *Brabazon*, which had a maximum take-off weight of 129.4 tons *131.4 tonnes*, a wing span of 230 ft *70.10 m* and a length of 177 ft *53.94 m*. This eight-engined aircraft first flew on 4 Sept 1949. The *Concorde* (see below) has a maximum take-off weight of 408,000 lb *185 065 kg* (182.14 tons).

The supersonic BAC/Aerospatiale *Concorde*, first flown on 2 Mar 1969, with a capacity of 128 passengers, cruises at up to Mach 2.2 (1450 mph 2333 km/h). It flew at Mach 1.05 on 10 Oct 1969, exceeded Mach 2 for the first time on 4 Nov 1970 and became the first supersonic airliner used on passenger services on 21 Jan 1976 when Air France and British Airways opened services simultaneously between, respectively, Paris-Rio de Janeiro and London-Bahrain. Services between London and New York and Paris and New York began on 22 Nov 1977. The New York-London record is 2 hr 59 min 14 sec (average 1166.031 mph 1876.54 km/h) set on 20 Jan 80.

The Aero Spacelines Guppy-201 has a cargo hold with a usable volume of 39,000 ft³ 1104,4 m³ and a maximum take-off weight of 75.9 tons 77,1 tonnes. Wing span is 156.2 ft 47,63 m, length 143.8 ft 43,84 m and overall height 48.5 ft 14,78 m. The giant Lockheed C-5A Galaxy military transport has a main cargo hold with a usable volume of 34,795 ft³ 985,3 m³, and a maximum take-off weight of 343.3 tons 348,8 tonnes. Its wing span is 222.7 ft 67,88 m, length 247.8 ft 75,54 m and overall height 65.1 ft 19,85 m. It has in addition forward and rear upper decks with a combined volume of 8030 ft³ 227,4 m³, which accommodates the flight crew, and provides seating for a relief crew and others, totalling 15 forward and 75 troops on the rear deck.

The largest aircraft propeller ever used was the 22 ft 7½ in 6,9 m diameter Garuda propeller, fitted to the Linke-Hofmann R II built in Wroclaw, Poland, which flew in 1919. It was driven by four 260 hp Mercedes engines and turned at only 545 rpm.

The longest distance scheduled non-stop flight is the weekly Pan-Am Sydney-San Francisco non-stop 13 hr 25 min Flight 816, in a Boeing 747 SP, opened in December 1976, over 7475 statute miles 12 030 km. The longest delivery flight by a commercial jet is 8936 nautical miles or 10,290 statute miles 16 560 km from Seattle, Washington, USA to Cape Town, South Africa by the South African Airway's Boeing 747 SP (Special performance) 'Matroosberg' with 178 400 kg 175.5 tons of pre-cooled fuel in 17 hr 22½ min on 23-29 Mar 1976.

The FAI ratified flight record between the capitals of Scotland and England is 26 min 25 sec in a SEPECAT Jaguar GR.Mk I flown by Sqn Ldr R. Peart AFC, DFM, on 9 Sept 1977 averaging 750.89 mph 1208,45 km/h for the 330.6 mile 532 km flight.

The record for central London to downtown New York City by helicopter and Concorde is 3 hr 59 min 44 sec and the return in 3 hr 40 min 40 sec both by David J. Springbett, 1982 Salesman of the Year, on 8 and 9 Feb 1982.

The official air speed record is 2193.167 mph 3529.56 km/h by Capt Eldon W. Joersz and Maj George T. Morgan, Jr, in a Lockheed SR-71A near Beale Air Force Base, California, USA over a 15/25 km course on 28 July 1976.

The fastest fixed-wing aircraft in the world was the US North American Aviation X-15A-2, which flew for the first time (after modification from X-15A) on 28 June 1964 powered by a liquid oxygen and ammonia rocket propulsion system. Ablative materials on the airframe once enabled a temperature of 3000° F to be withstood. The landing speed was 210 knots (242 mph 389.1 km/h) momentarily. The highest speed attained was 4534 mph 7297 km/h (Mach 6.72) when piloted by Maj William J. Knight, USAF (b. 1930), on 3 Oct 1967. An earlier version piloted by Joseph A. Walker (1920–66), reached 354,200 ft 107 960 m (67.08 miles) also over Edwards Air Force Base, California, USA, on 22 Aug 1963. The programme was suspended after the final flight of 24 Oct 1968.

The US NASA Rockwell International Space Shuttle Orbiter *Columbia* was launched from the Kennedy Space Center, Cape Canaveral, Florida commanded by Cdr John W. Young USN and piloted by Robert L. Crippen on 12 Apr 1981 after the expenditure of \$9900 million since 1972. *Columbia* broke all records for speed by a fixed wing craft with 16,600 mph 26715 km/h at main engine cut-off. After re-entry from 400,000 ft 122 km, experiencing temperatures of 2160°C 3920°F, she became the heaviest ever glider at 97 tonnes/tons with the highest ever landing speed of 216 mph 347 km/h on Rogers Dry Lake, California on 14 Apr 1981. Under a new FAI category P for Aerospacecraft, the *Columbia* is holder of the current absolute world records for duration of 54 hr 20 min 52 sec, distance 937,156 miles 1508 202 km, altitude 169.14 miles 272.2 km and mass lifted to altitude of 212,636.5 lb 96 450.3 kg.

The world's fastest jet aircraft is the USAF Lockheed SR-71 reconnaissance aircraft (see Official record) which was first flown on 22 Dec 1964 and is reportedly capable of attaining an altitude ceiling of close to 100,000 ft *30 480 m*. The SR-71 has a wing span of 55.6 ft *16,94 m* and a length of 107.4 ft *32,73 m* and weighs 170,000 lb (75.9 tons *77,1 tonnes*) at take-off. Its reported range is 2982 miles *4800 km* at Mach 3 at 78,750 ft *24 000 m*. At least 30 are believed to have been built. The fastest combat aircraft in the world is the USSR Mikoyan MiG-25 fighter (code name 'Foxbat'). The reconnaissance 'Foxbat-B' has been tracked by radar at about Mach 3.2 (2110 mph *3395 km/h*). When armed with four large underwing air-to-air missiles known to NATO as 'Acrid', the fighter 'Foxbat-A' is limited to Mach 2.8 (1845 mph *2969 km/h*). The single-seat 'Foxbat-A' spans 45 ft 9 in *13,95 m*, is 73 ft 2 in *22,3 m* long and has a maximum take-off weight of 79,800 lb *36 200 kg*.



David Springbett of Taplow, Buckinghamshire, who triumphed over bureaucracy and other uncertainties to set records for both the central London to downtown New York (*above*) and return (*left*) each inside 4 hours (see p. 148).



(MiG-25) aircraft, powered by two 30,865 lb 14 000 kg thrust turbojet engines, on 31 Aug 1977.

The greatest recorded height by any pilot without a pressure cabin or even a pressure suit has been 49,500 ft 15 085 m by Sq Ldr G. W. H. Reynolds, DFC in a Spitfire Mark VC over Libya in 1942.

Duration

The flight duration record is 64 days, 22 hr 19 min and 5 sec, set up by Robert Timm and John Cook in a Cessna 172 'Hacienda'. They took off from McCarran Airfield, Las Vegas, Nevada, USA, just before 3.53 p.m. local time on 4 Dec 1958, and landed at the same airfield just before 2.12 p.m. on 7 Feb 1959. They covered a distance equivalent to six times round the world with continued refuellings, without landing.

The record for duration without refuelling is 84 hr 32 min, set by Walter E. Lees and Frederic A. Brossy in a Bellanca monoplane with a 225 hp Packard Diesel engine, at Jacksonville, Florida, on 25–28 May 1931.

The longest non-stop flight without refueling was a 12,519 mile 20 146 km flight from Okinawa to Madrid, Spain by a USAF B-52H in 1962.

AIRPORTS

Largest World

The world's largest airport is the £2,800 million King Abdul-Aziz International Airport near Jeddah, Saudi Arabia covering an area of 40 miles² 103 km². The Hajj Terminal is now the world's largest roofed structure covering 1.5 km² 370 acres. The present 6 runways and 5 terminal buildings of the Dallas/Fort Worth Airport, Texas, USA are planned to be extended to 9 runways and 13 terminals with 260 gates with an ultimate capacity for 150 million passengers. The world's largest airport terminal is Hartsfield Atlanta International Airport opened on 21 Sept 1980 with floor space covering 50.50 acres 20.43 ha. It has 138 gates handling nearly 50 million passengers a year but has a capacity for 75 million.

Great Britain

Seventy-two airline companies from 67 countries operate scheduled services into Heathrow Airport—London (2957 acres 1197 ha), and during 1981 there was a total of 247,043 air transport movements handled by a staff of 50,000 employed by the various companies and the British Airports Authority. The total number of passengers, both incoming and outgoing, was 26,770,543. The most flights yet handled by Heathrow in a day was 986 on 19 July 1974 and the largest number of passengers yet handled in a day was 112,880 on 31 Aug 1980. Aircraft fly to more than 90 countries.

Fastest biplane

The fastest recorded biplane was the Italian Fiat C.R.42B, with a 1010 hp Daimler-Benz DB601A engine, which attained 323 mph 520 km/h in 1941. Only one was built.

Fastest piston-engined aircraft

The fastest speed at which a piston-engined aeroplane has ever been measured was for a cut-down privately owned Hawker *Sea Fury* which attained 520 mph 836 km/h in level flight over Texas, USA, in August 1966 piloted by Mike Carroll (k. 1969) of Los Angeles. The official record for a piston-engined aircraft is 499.048 mph 803,138 km/h over Mud Lake, Tonopah, Nevada by Steve Hinton (US) in a modified North American P51D *Mustang* powered by a 3800 hp Rolls-Royce Griffon, over a 3 km 1.86 miles course at restricted altitude on 14 Aug 1979.

Fastest propeller-driven aircraft

The Soviet Tu-114 turboprop transport is the world's fastest propeller-driven aeroplane. It achieved a recorded speed 545.076 mph 877,212 km/h carrying heavy payloads over measured circuits. It is developed from the Tupolev Tu-95 bomber, known in the West as the 'Bear', and has four 14,795 hp engines. The turboprop-powered Republic XF-84H prototype US Navy fighter which flew on 22 July 1955 had a top design speed of 670 mph 1078 km/h but was abandoned.

Fastest trans-Atlantic flight

The trans-Atlantic flight record is 1 hr 54 min 56.4 sec by Maj James V. Sullivan, 37, and Maj Noel F. Widdifield, 33 flying a Lockheed SR-71A eastwards on 1 Sept 1974. The average speed, slowed by refuelling by a KC-135 tanker aircraft, for the New York–London stage of 3461.53 miles 5570.80 km was 1806.963 mph 2908,026 km/h. The solo record (Gander to Gatwick) is 8 hr 47 min 32 sec by Capt John J. A. Smith in a Rockwell 685 on 12 Mar 1978.

Altitude Official record

The official world altitude record by an aircraft taking off from the ground under its own power is 123,524 ft (23.39 miles 37 650 m) by Aleksandr Fedotov (USSR) in a Mikoyan E.266M,

Busiest

The world's busiest airport is the Chicago International Airport, O'Hare Field, Illinois, USA with a total of 645,614 movements and 37,992,151 passengers in the year 1981. This represents a take-off or landing every 48.8 sec round the clock. Heathrow Airport—London handles more international traffic than any other. The busiest landing area ever has been Bien Hoa Air Base,

south Vietnam, which handled more than 1,000,000 take-offs and landings in 1970. The world's largest "helipad" was An Khe, south Vietnam.

Highest and lowest

The highest airport in the world is La Sa (Lhasa) Airport, Tibet at 14,315 ft 4363 m.

AIRSHIPS

Earliest

The earliest flight in an airship was by Henri Giffard from Paris in his steam-powered coal-gas 88,300 ft³ 2500 m³ 144 ft 43.8 m long airship on 24 Sept 1852. The earliest British airship was a 20,000 ft³ 566 m³ 75 ft 22.8 m long craft built by Stanley Spencer whose maiden flight was from Crystal Palace, Bromley, Greater London on 22 Sept 1902. The latest airship to be built in Britain is the 181,150 ft³ 5130 m³ 164 ft 50 m long Airship Industries (formerly Aerospace Developments) Skyship 500 (G-BIHN), a development of the AD-500. It flew for the first time at RAF Cardington, Bedfordshire on 28 September 1981.

Largest Rigid

The largest rigid airship ever built was the 210.5 ton 213.9 tonne German *Graf Zeppelin II* (LZ 130), with a length of 245 m 803.8 ft and a capacity of 7,062,100 ft³ 199 981 m³. She made her maiden flight on 14 Sept 1938 and in May and August 1939 made radar spying missions in British air space. She was dismantled in April 1940. Her sister ship *Hindenburg* was 5.6 ft 1.70 m longer.

British

The largest British airship was the R101 built by the Royal Airship Works, Cardington, Bedfordshire, which first flew on 14 Oct 1929. She was 777 ft 236.8 m in length and had a capacity of 5,508,800 ft³ 155 995 m³. She crashed near Beauvais, France, killing 48 aboard on 5 Oct 1930.

Non-Rigid

The largest non-rigid airship ever constructed was the US Navy ZPG 3-W which had a capacity of 1,516,300 ft³ 42 937 m³, was 403.4 ft 122.9 m long and 85.1 ft 25.93 m in diameter, with a crew of 21. She first flew on 21 July 1958, but crashed into the sea in June 1960.

Hot-Air

The world duration and distance records, of 1 hr 12 min and 6.61 miles 10,636 km respectively, are held by the Cameron D-38 hot-air airship flown at Bristol, Avon on 26 Aug 1981 by Donald Cameron (UK).

Greatest passenger load

The most people ever carried in an airship was 207 in the US Navy *Akron* in 1931. The trans-Atlantic record is 117 by the German *Hindenburg* in 1937.

Distance record (Straight line)

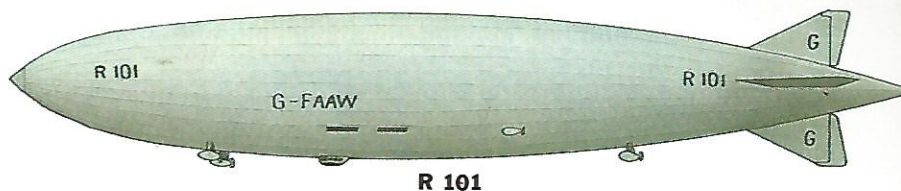
The FAI accredited distance record for airships is 3967.1 miles 6384.5 km, set up by the German *Graf Zeppelin*, captained by Dr Hugo Eckener, between 29 Oct and 1 Nov 1928.

Duration record

The longest recorded flight by a non-rigid airship (without refuelling) is 264 hr 12 min by a US Navy Goodyear-built ZPG-2 class ship (Cdr J. R. Hunt USN) from South Weymouth NAS, Massachusetts, USA on 4-15 Mar 1957 landing back at Key West, Florida having flown 9448 miles 15,205 km.

AIRSHIPS

Some concept of the enormity of lighter-than-air ships when compared with the largest heavier-than-air aircraft.



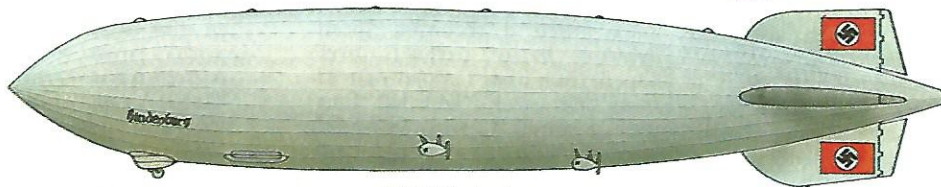
Boeing 747 (Jumbo Jet)

US Navy ZPG 3/W



US Navy (Goodyear built) ZPG 2 class ship

US Navy Akron



The Hindenburg

The Graf Zeppelin II



The highest landing ever made by a fixed-wing plane is 19,947 ft 6080 m on Dhaulagiri, Himalaya by a Pilatus Porter, named 'Yeti', supplying the 1960 Swiss Expedition. The lowest landing field is El Lisan on the east shore of the Dead Sea, 1180 ft 360 m below sea-level, but during World War II BOAC Short C-class flying-boats operated from the surface of the Dead Sea 1292 ft 394 m below sea level. The lowest international airport is Schiphol, Amsterdam, at 13 ft 3.9 m below sea-level. Rotterdam's airport is fractionally lower at 15 ft 4.5 m.

Farthest and Nearest to city centres

The airport farthest from the city centre it allegedly serves is Viracopos, Brazil which is 60 miles 96 km from São Paulo. The Gibraltar airport is 880 yd 800 m from the centre.

Longest runway World

The longest runway in the world is one of 7 miles 11 km in length (of which 15,000 ft 4572 m is concreted) at Edwards Air Force Base on the bed of Rogers Dry Lake at Muroc, California, USA. The whole test centre airfield extends over 65 miles² 168 km². In an emergency an auxiliary 12 mile 19 km strip is available along the bed of the Dry Lake. The world's longest civil airport runway is one of 16,076 ft (3.04 miles 4.89 km) at Pierre van Ryneveld Airport Upington, South Africa constructed in five months from August 1975 to January 1976.

Great Britain

The longest runway available normally to civil aircraft in the United Kingdom is No. 1 at Heathrow Airport—London, measuring 12,800 ft (2.42 miles 3.90 km).

HELICOPTERS

Fastest

Bell Helicopters claimed in June 1980 that their Model 301 (US Army XV-15) tilt-rotor research aircraft attained a true air speed of 346.6 mph 557.8 km/h in level flight. It is powered by two turbo shaft engines. The official world speed record for a pure helicopter is 228.9 mph 368.4 km/h set by Gourguen Karapetyan in a Mil A-10 on a 15/25 km course near Moscow, USSR on 21 Sept 1978.

Largest

The world's largest helicopter is the Soviet Mil Mi-12 ('Homer'), also known as the V-12, which set up an international record by lifting a payload of 88,636 lb (39.5 tons 40.2 tonnes) to a height of 7398 ft 2255 m on 6 Aug 1969. It is powered by four 6500 hp turboshaft engines and has a span of 219 ft 10 in 67 m over its rotor tips with a length of 121 ft 4½ in 37.00 m and weighs 103.3 tons 105 tonnes.

Smallest

The Aerospace General Co one-man rocket assisted minicopter weighs about 160 lb 72.5 kg and can cruise 250 miles 400 km at 85 mph 137 km/h.

Highest

The altitude record for helicopters is 40,820 ft 12 442 m by an Aérospatiale SA315B Lama, over France on 21 June 1972. The highest recorded landing has been at 23,000 ft 7000 m below the South-East face of Everest in a rescue sortie in May 1971. The World Trade Center helipad is 1385 ft 422 m above street level in New York City on the South Tower.

AUTOGYROS

Earliest

The autogyro or gyroplane, a rotorcraft with an unpowered rotor turned by the airflow in flight, preceded the practical helicopter with engine-driven rotor. Juan de la Cierva (Spain), made the first successful autogyro flight with his model C.4 (commercially named an *Autogiro*) at Getafe, Spain, on 9 Jan 1923. On 6 Dec 1955, Dr Igor B. Bensen (USA) flew his very simple open-seat Gyro-Copter and then made the design available in kit form to amateur constructor/pilots.

Speed altitude and distance records

Wing Cdr Kenneth H. Wallis (GB) holds the straight-line distance record of 543.27 miles 874.32 km set in his WA-116F autogyro on 28 Sept 1975 non-stop from Lydd, Kent to Wick, Highland. Wg Cdr Wallis flew his WA-116, with 72 hp Mc-

Calliope engine, to a record altitude of 15,230 ft 4639 m on 11 May 1968, and to a record speed of 111.2 mph 179 km/h over a 3 km straight course on 12 May 1969.

FLYING-BOAT

Fastest

The fastest flying-boat ever built has been the Martin XP6M-1 *Seamaster*, the US Navy 4 jet engined minelayer flown in 1955-9 with a top speed of 646 mph 1040 km/h. In September 1946 the Martin JRM-2 *Mars* flying-boat set a payload record of 68,327 lb 30 992 kg.

The official flying-boat speed record is 566.69 mph 912 km/h, set up by Nikolai Andrievsky and crew of two in a Soviet Beriev M-10, powered by two AL-7 turbojets, over a 15/25 km course on 7 Aug 1961. The M-10 holds all 12 records listed for jet-powered flying-boats, including an altitude of 49,088 ft 14 962 m set by Georgiy Buryanov and crew over the Sea of Azov on 9 Sept 1961.

BALLOONING

Earliest

The earliest recorded ascent was by a model hot air balloon invented by Father Bartolomeu de Gusmão (*né* Lourenço) (b. Santos, Brazil, 1685), which was flown indoors at the Casa da India, Terreiro do Paço, Portugal on 8 Aug 1709.

Distance record (*Great-circle distance between take-off and first landing point*)

The record distance travelled by a balloon is 5208.68 miles 8382.54 km by the Raven experimental helium-filled balloon *Double Eagle V* on 9-12 Nov 1981, from Nagashima, Japan to Covello, California. The crew for this first manned balloon crossing of the Pacific Ocean was Ben L. Abruzzo, Rocky Aoki, Ron Clark and Larry M. Newman.

Highest Unmanned

The highest altitude attained by an unmanned balloon was 170,000 ft 51 815 m by a Winzen balloon of 47.8 million ft³ 1.35 million m³ launched at Chico, California in October 1972.

Manned

The greatest altitude reached in a manned balloon is the unofficial 123,800 ft (23.45 miles 37 735 m) by Nicholas Piantanida (1933-66) of Bricktown, New Jersey, USA, from Sioux Falls, South Dakota, USA, on 1 Feb 1966. He landed in a cornfield in Iowa but did not survive. The official record is 113,740 ft 34 668 m by Cdr Malcolm D. Ross, USNR and the late Lt-Cdr Victor A. Prother, USN in an ascent from the deck of USS *Antietam* on 4 May 1961, over the Gulf of Mexico.

Largest

The largest balloon built is one with an inflatable volume of 70 million ft³ 2 million m³ by Winzen Research Inc, Minnesota, USA.

Ballooning (*Hot-Air*)

The world's distance record for hot-air balloons is 717.52 miles 1154.74 km, set by French balloonists Michel Arnould and Hélène Dorigny on 25-26 Nov 1981 in the Cameron Type A-530 *Semiramis* from Ballina, County Mayo, Eire to St Christophe-en-Boucherie, France. This flight has also been homologated by the FAI as a new world duration record for hot-air balloons of 29 hr 5 min 48 sec, and in addition the *Semiramis* is now the largest hot-air balloon ever built with a volume of 530,000 ft³ 15 008 m³.

On 31 Oct 1980 Julian Nott (GB) attained an altitude, which has been ratified by the FAI, of 55,137 ft 16 805 m, taking off from Longmont, near Denver, Colorado, in the Cameron-built ICI balloon *Innovation*. The FAI endurance and distance record for a gas and hot-air balloon is 96 hr 24 min and 2074.817 miles 3339.086 km by Zanussi crewed by Donald Allan Cameron (GB) and Major Christopher Davey which failed by only 103 miles 166 km to achieve the first balloon crossing of the Atlantic on 30 July 1978.

The record altitude in an open basket is 53,000 ft 16 154.4 m by Chauncey Dunn (US) on 1 Aug 1979. He wore a pressure suit.

Oldest and Youngest Passengers
Airborne births are reported every year. The oldest person to fly has been Mr Izumi (see pp. 16 & 17) when he was 108 in 1973 from Tokunashima to Osaka, Japan and return. The oldest Briton to fly was probably Mrs Julia Caroline Black (b. 24 Feb 1874 d. 12 May 1980) on a British Caledonian flight from Abbot-sinch to Gatwick on 17 Nov 1978 when aged 104 years 8 months.

Oldest and youngest pilots

The youngest age at which anyone has ever qualified as a military pilot is 15 yr 5 months in the case of Sgt Thomas Dobney (b. 6 May 1926) of the RAF. He had overstated his age (14 yr) on entry. The youngest solo pilot has been Kenny Bennett in an ultra light Quicksilver aircraft on a farm near Aliquippa, Pennsylvania 3 days before his 10th birthday on 29 May 1981. The world's oldest pilot is Ed McCarty (b. 18 Sept 1885) of Kimberly, Idaho, USA, who in 1979 was flying his rebuilt 30-year-old Ercole aged 94. Glenn E. Messer of Birmingham, Alabama has been flying 'steady' since 13 May 1911. The oldest British pilot is Air Commodore Harold 'Daddy' Probyn CB, CBE, DSO (b. 8 Dec 1891), who first flew with the RFC in 1916 and now flies regularly in Kenya.

Most flying hours

Max Conrad (1903-79) (USA) between 1928 and mid-1974 totalled 52,929 hr 40 min logged flight—more than 6 years airborne. He completed 150 trans-Atlantic crossings in light aircraft.

Most take-offs and landings from airports

Al Yates and Bob Phoenix of Texas, USA made 193 take-offs and daylight landings at unduplicated airfields in 14 hr 57 min in a Piper Seminole, on 15 June 1979.

Human-powered flight

The world distance record for human powered flight was set on 12 June 1979 by Dr Paul MacCready's man powered aircraft *Gossamer Albatross*, piloted and pedalled by Bryan Allen. The *Albatross* took off from Folkestone at 05.51 hrs and landed 22.26 miles 35.82 km distant at Cap Gris Nez, France at 08.40 hrs. The duration was 2 hr 49 min, and this achievement won the £100,000 prize offered by Henry Kremer for the first man-powered crossing of the English Channel.

The 70 lb 31.75 kg *Gossamer Condor* (96 ft 29.26 m wing-span) designed by Dr Paul MacCready flew the figure-of-8 course between pylons 880 yd 804.6 m apart powered by the 9¼ stone 61.2 kg Bryan Allen at Shafter Airport, California on 23 Aug 1977 to win the £50,000 Kremer prize. The flight lasted 7 min 27.5 sec.

MODEL AIRCRAFT

Altitude, speed and duration

The World record for altitude is 26,929 ft 8208 m by Maynard L. Hill (USA) on 6 Sept 1970 using a radio-controlled model. The free flight speed record is 213.70 mph 343.92 km/h by V. Goukouné and V. Myakinin (both USSR) with a radio-controlled model at Klementyeva, USSR, on 21 Sept 1971. The record duration flight is one of 32 hr 7 min 40 sec by Eduard Svoboda (Czechoslovakia), flying a radio controlled glider on 23-24 Aug 1980. An indoor model powered by a rubber motor designed by J. Richmond (USA) set a duration record of 52 min 14 sec on 31 Aug 1979.

Cross-channel

The first cross-channel model helicopter flight was achieved by an 11 lb 5.00 kg model Bell 212 radio-controlled by Dieter Zeigler for 32 miles 52 km between Ashford, Kent and Ambleteuse, France on 17 July 1974.

Smallest

The smallest model aircraft to fly is one weighing 0.004 oz 0.1 g powered by attaching a horsefly and designed by the insectonaut Don Emmick of Seattle, Washington on 24 July 1979. One flew for 5 minutes at Kirkland, Washington, USA.

Paper aircraft

The flight duration record for a paper aircraft is 15.0 sec by William Harlan Pryor in the Municipal Auditorium, Nashville,

Tennessee, USA on 26 Mar 1975. The indoor record with a 12 ft 3.65 m ceiling is 1 min 33 sec set in the Fuji TV studios, Tokyo, Japan on 21 Sept 1980. A paper plane was reported and witnessed to have flown 1¼ miles 2.0 km by 'Chick' C. O. Reinhardt from a 10th storey office window at 60 Beaver Street, New York City across the East River to Brooklyn in August 1933. It was helped by a thermal from a coffee-roasting plant.

Indoor

An indoor distance of 155 ft 7 in 47.42 m was recorded by Eugene Sykes at the McChord Air Force Base, Washington, USA, on 4 Feb 1982.

5. POWER PRODUCERS

Steam engines

The oldest steam engine in working order is the 1812 Boulton & Watt 26 hp 42 in 1066 mm bore beam engine on the Kenner & Avon Canal at Great Bedwyn, Wiltshire. It was restored by the Crofton Society in 1971.

The largest single cylinder steam engine ever built was that designed by Matthew Loam of Cornwall and made by the Hayle Foundry Co in 1849 for installation for land draining at Haarlem, Netherlands. The cylinder was 12 ft 3.65 m in diameter such that each stroke also of 12 ft lifted 13,440 gallons 61 096 or 60 tons of water.

The most efficient steam engine recorded was Taylor's engine built by Michael Loam for the United Mines, Gwennap, Cornwall in 1840. It registered only 1.7 lb of coal per horsepower per hour.

Earliest atomic pile

The world's first atomic pile was built in a disused squash court at Stagg Field, University of Chicago, Illinois, USA. It went 'critical' at 3.25 pm on 2 Dec 1942.

Power plant Largest World

The world's most powerful power station is the Grand Coulee, Washington State, USA with 9.7 million kilowatt hours (ultimately 10,830 MW) which began operating in 1942.

The first generator at the Itaipu on the river Paraná on the Brazil-Paraguay border (with an ultimate 12,600,000 kW from 18 turbines) is expected to turn in 1983. A 20,000 MW power station project on the Tunguska river, USSR was announced in February 1982.

Great Britain

The power station with the greatest installed capacity in Great Britain is Longannet, Fife, Scotland which attained 2400 MW by December 1972. At Drax, North Yorkshire, 6 x 660 MW sets yielding 3960 MW are expected to be in commission by 1984. A 3300 MW oil-fired installation is under construction on the Isle of Grain, Kent.

The largest hydroelectric plant in the United Kingdom is the North of Scotland Hydroelectricity Board's Power Station at Loch Sloy, Central. The installed capacity of this station is 130 MW. The Ben Cruachan Pumped Storage Scheme was opened on 15 Oct 1965 at Loch Awe, Strathclyde, Scotland. It has a capacity of 400 MW and cost £24,000,000. The 1880 MW underground pumped storage scheme at Dinorwic, Gwynedd will be the largest built in Europe with a head of 1739 ft 530 m and a capacity of 13,770 ft³/sec 390 m³/sec. Completion is due in 1982.

Nuclear power station Largest

The world's largest atomic power station is the Ontario Hydro's Pickering station which in 1973 attained full output of 2160 MW.

Nuclear reactor Largest

The largest single nuclear reactor in the world is the 1500 MW reactor at the Ignalinskaya station, Lithuania, USSR, assembly of which began in April 1982.

Solar power plant

The largest solar furnace in the world is the 5 megawatt Solar Thermal Test Facility at the Sandia Laboratories, Albuquerque, New Mexico, USA completed in December 1977. Sunlight from 222 heliostats is concentrated on a target 114 ft 34.7 m up in the power tower. Work on the \$140 million, 1818 mirror, Solar One near Daggett, Southern California, USA began in January 1980 for completion in early 1982. The 22 acres 8.9 ha of mirror should yield 10 megawatts.

Tidal power station

The world's first major tidal power station is the *Usine marémotrice de la Rance*, officially opened on 26 Nov 1966 at the Rance estuary in the Golfe de St Malo, Brittany, France. It was built in five years at a cost of 420,000,000 francs (£34,685,000), and has a net annual output of 544,000,000 kWh. The 880 yd 804 m barrage contains 24 turbo alternators. This harnessing of the tides has imperceptibly slowed the Earth's rate of revolution. The \$1000 million (£540 million) Passamaquoddy project for the Bay of Fundy in Maine, USA, and New Brunswick, Canada, remains a project.

Boiler Largest

The largest boilers ever designed are those ordered in the United States from The Babcock & Wilcox Company (USA) with a capacity of 1330 MW so involving the evaporation of 9,330,000 lb 4 232 000 kg of steam per hour. The largest boilers now being installed in the United Kingdom are the three 660 MW units for the Drax Power Station (see p.152) designed and constructed by Babcock & Wilcox Ltd.

Generator Largest

Generators in the 2,000,000 kW (or 2000 MW) range are now in the planning stages both in the UK and the USA. The largest under construction is one of 1300 MW by the Brown Boveri Co of Switzerland for the Tennessee Valley Authority.

Turbines Largest

The largest hydraulic turbines are those rated at 815,000 kW (equivalent to 1.1 million hp), 32 ft 9.7 m in diameter with a 401 ton 407 tonnes runner and a 312½ ton 317.5 tonnes shaft installed by Allis-Chalmers at the Grand Coulee 'Third Powerplant', Washington, USA.

Pump

The world's largest reversible pump-turbine is that made by Allis-Chalmers for the Bath County project, Virginia, USA. It has a maximum rating of 457 MW as a turbine and maximum operating head of 393 m 1289 ft. The impeller/runner diameter is 6349 mm 20 ft 9 in with a synchronous speed of 257.1 rpm.

Longest Lasting Battery

The zinc foil and sulfur dry pile batteries made by Watlin and Hill of London in 1840 have powered ceaseless tintinnabulation inside a bell jar at the Clarendon Laboratory, Oxford since 1840. The first 'perpetual motion' patent filed under the World Patent Cooperation Treaty was No 80/00866 by Edmund and Robert Kraus of California, USA.

Gas works Largest

The flow of natural gas from the North Sea is diminishing the manufacture of gas by the carbonisation of coal and the re-forming process using petroleum derivatives. Britain's largest ever gasworks 300 acres 120 ha were at Beckton, Newham. Currently the most productive gasworks are at the oil re-forming plant at Greenwich, Greater London, with an output of 420.5 million ft³ 11 907 298 m³ per day.

Biggest black-out

The greatest power failure in history struck seven north-eastern US States and Ontario, Canada, on 9-10 Nov 1965. About 30,000,000 people in 80,000 miles² 207 200 km² were plunged into darkness. Only two were killed. In New York City the power failed at 5.27 pm and was not fully restored for 13½ hr. The total consequential losses in the 52 min New York City power failure of 13 July 1977 including looting was put at \$1 billion (then £580 million).

Windmill Earliest

The earliest recorded windmills are those used for grinding corn in Iran (Persia) in the 7th century AD.

The earliest date attributed to a windmill in England is 1185 for one at Weedley, near Hull, Humberside. The oldest Dutch mill is the towermill at Zeddam, Gelderland built in c. 1450. The oldest working mill in England is the post-mill at Outwood, Surrey, built in 1665, though the Ivinghoe Mill in Pitstone Green Farm, Buckinghamshire, dating from 1627, has been restored. The postmill in North Ronaldsay, Orkney Islands operated until 1905.

Windmill Largest

The world's most powerful wind generator is the 3000 kW 150 m 492 ft tall turbine, built by Grosse Wind energie-Anlage which was set up in 1982 on the Friesian coast of West Germany. A £5.6 million 3000 kW aerogenerator with 60 m 196 ft 10 in blades on Bugar Hill, Evie, Orkney is planned for completion in 1982/83.

Windmill Largest conventional

The largest Dutch windmill is the Dijkpolder in Maasland built in 1718. The sails measure 95¾ ft 29 m from tip to tip. The tallest windmill in the Netherlands is De Walvisch in Schiedam built to a height of 108 ft 33 m in 1794. The tallest windmill still standing in Britain is the 9 storey Sutton mill, Norfolk built in 1853 which before being struck by lightning in 1941 had sails 73 ft 22.2 m in diameter with 216 shutters.

Water Mills

There has been a water-powered corn-mill at Priston Mill near Bath, Avon since pre-Norman times. The earliest record is dated AD 931.

6. ENGINEERING

Blast furnace Largest

The world's largest blast furnace is one with an inner volume of 5070 m³ 179,040 ft³ and a 14.8 m 48 ft 6½ in diameter hearth at the Oita Works, Kyūshū, Japan completed in October 1976 with an annual capacity of 4,380,000 tons 4 451 500 tonnes.

Cat cracker Largest

The world's largest catalyst cracker is the Exxon Co's Bayway Refinery plant at Linden, New Jersey, USA with a fresh feed rate of 5,040,000 US gal 19 077 000 litres per day.

Conveyor belt Longest

The world's longest single flight conveyor belt is one of 18 miles 29 km under construction in Western Australia by Cable Belt Ltd of Camberley, Surrey whose 9 mile 14.5 km record installation of 1970 in Kentucky, USA will then be doubled. The longest installation in Great Britain is also by Cable Belt and of 5½ miles 8.9 km underground at Longannet Power Station, Fife, Scotland. The world's longest multi-flight conveyor is one of 100 km 62 miles between the phosphate mine near Bucraa and the port of El Aaiun, Morocco, built by Krupps and completed in 1972. It has 11 flights of between 9 and 11 km 5.6-6.8 miles and was driven at 4.5 m/sec 10.06 mph but has been closed down due to Polisario Front guerrilla activity.

Crane Most Powerful World

The world's most powerful crane is aboard the 53,000 ton 584 ft 178 m long converted tanker *Odin* owned by Heerema Engineering Service of The Hague, Netherlands. On 26 May 1976 she made a test lift on 3000 tonnes 3048 tons at a radius maximum of 105 ft 32 m in the Calard Canal, Europoort.

Gantry crane Most powerful

The 92.3 ft 28.14 m wide Rahco (R. A. Hanson Disc. Ltd) gantry crane at the Grand Coulee Dam Third Powerplant was tested to lift a load of 2232 long tons 2268 tonnes in 1975. It lowered a 3,944,000 lb 1789 tonne generator rotor with an accuracy of ¼ in 0.8 mm.

Crane Tallest mobile

The tallest mobile crane in the world is the 810 tonnes Rosenkranz K10001 with a lifting capacity of 1000 tonnes 984 tons, a combined boom and jib height of 202 m 663 ft. It is carried on 10

tracks each limited to 75 ft 8 in 23.06 m and an axle weight of 118 tonnes 176 tons. It can lift 30 tonnes 29.5 tons to a height of 160 m 525 ft.

Dragline Largest World

The Ural Engineering Works at Ordzhonikidze, USSR, completed in March 1962, has a dragline known as the ES-25(100) with a boom of 100 m 328 ft and a bucket with a capacity of 31.5 yd³ 24 m³. The world's largest walking dragline is the Bucyrus-Erie 4250W with an all-up weight of 12,000 tons 12 192 tonnes and a bucket capacity of 220 yd³ 168 m³ on a 310 ft 94.4 m boom. This machine, the world's largest mobile land machine, is now operating on the Central Ohio Coal Company's Muskingum site in Ohio, USA.

Great Britain

The largest dragline excavator in Britain is 'Big Geordie', the Bucyrus-Erie 1550W 6250 gross hp, weighing 3000 tons 3048 tonnes with a forward mast 160 ft 48.7 m high. On open-cast coal workings at Butterwell, Northumberland in September 1975, it proved able to strip 100 tons 101 tonnes of overburden in 65 sec with its 65 yd³ 49.7 m³ bucket on a 265 ft 80.7 m boom. It is owned by Derek Crouch (Contractors) Ltd of Peterborough, Cambridgeshire.

Escalator Longest

The term was registered in the US on 28 May 1900 but the earliest 'Inclined Escalator' was installed by Jesse W. Reno on the pier at Coney Island, New York in 1896. The first installation in Britain was at Harrods, Knightsbridge, London in November 1898. The escalators on the Leningrad Underground, USSR at Lenin Square have 729 steps and vertical rise of 59.68 m 195 ft 9 1/2 in. The longest escalators in Britain are the four in the Tyne Tunnel, Tyne and Wear installed in 1951. They measure 192 ft 58.7 m between combs with a vertical lift of 85 ft 25.9 m and a step speed of up to 1.7 mph 2.7 km/h.

The world's longest 'moving sidewalks' are those installed in 1970 in the Neue Messe Centre, Dusseldorf, W. Germany which measure 225 m 738 ft between comb plates. The longest in Great Britain is the 375 ft 114.3 m long Dunlop Starglide at London Airport Terminal 3 installed in March-May 1970.

Excavator Largest

The world's largest excavator is the 13,000 tonne bucket wheel excavator being assembled at the open cast lignite-mine of Hambach, W. Germany with a rating of 200 000 m³ 260,000 yd³ per 20 hr working day. It is 210 m 690 ft in length and 82 m 269 ft tall. The wheel is 67.88 m 222 ft in circumference with 5 m³ 6.5 yd³ buckets.

Forging Largest

The largest forging on record is one of a 450,600 lb 204.4 tonnes 55 ft 16.76 m long generator shaft for Japan, forged by the Bethlehem Steel Corp, Pennsylvania in October 1973.

Lathe Largest

The world's largest lathe is the 72 ft 21.9 m long 385 ton 391 tonnes giant lathe built by the Dortmunder Rheinstahl firm of Wagner in 1962. The face plate is 15 ft 4.57 m in diameter and can exert a torque of 289,000 ft/lb 39 955 m/kgf when handling objects weighing up to 200 tons 203 tonnes.

Greatest lift

The heaviest lifting operation in engineering history was the 41,000 short ton (36,607 long tons 37 194 tonnes) roof of the Velodrome in Montreal, Canada in 1975. It was raised by jacks some 4 in 10 cm to strike its centering.

Oldest machinery World

The earliest machinery still in use is the *dâlu*—a water-raising instrument known to have been in use in the Sumerian civilization which originated c. 3500 BC in Lower Iraq even earlier than the Sappas on the Nile.

Great Britain

The oldest piece of machinery (excluding clocks) operating in the United Kingdom is the snuff mill driven by a water wheel at Messrs Wilson & Co's Sharrow Mill in Sheffield, South York-

shire. It is known to have been operating in 1797 and more probably since 1730.

Nut Largest

The largest nuts ever made weigh 5.3 tonnes 104.3 cwt each and have an outside diameter of 52 in 132 cm and a 25 in 63.5 cm thread. Known as 'Pilgrim Nuts', they are manufactured by Doncasters Moorside Ltd. of Oldham, Lancashire for use on the columns of a large forging press.

Oil tank Largest

The largest oil tanks ever constructed are the five Aramco 1 1/2 million barrel storage tanks at Ju'aymah, Saudi Arabia. The tanks are 72 ft 21.94 m tall with a diameter of 386 ft 117.6 m and were completed in March 1980.

Passenger lift Fastest World

The fastest domestic passenger lifts in the world are the express lifts to the 60th floor of the 240 m 787.4 ft tall 'Sunshine 60' building, Ikebukuro, Tōkyō, Japan completed 5 Apr 1978. They were built by Mitsubishi Corp and operate at a speed of 2000 ft/min 609.6 m/min or 22.72 mph 36.56 km/h. Much higher speeds are achieved in the winding cages of mine shafts. A hoisting shaft 6800 ft 2072 m deep, owned by Western Deep Levels Ltd in South Africa, winds at speeds of up to 40.9 mph 65.8 km/h (3595 ft 1095 m per min). Otitis-media (popping of the ears) presents problems much above even 10 mph 16 km/h.





above: The world's largest hydraulic turbines being installed at the world's most powerful power station, Grand Coulee, Washington State, USA (see p. 153).



above: The world's largest valve—a 32 ft 9,75 m diameter 170 ton butterfly valve built for engine testing in the United States (see p. 157). (Axel Johnson Corporation)

left: The world's biggest nut—the 5,3 tonne Pilgrim nut made in Oldham, Lancashire, England for a forging press (see p. 154). (Oldham Chronicle)

Great Britain

The longest lift in the United Kingdom is one 930 ft long inside the B.B.C. T.V. tower at Bilsdale, West Moor, North Yorkshire, built by J. L. Eve Construction Co Ltd. It runs at 130 ft 39,6 m/min. The longest fast lifts are the two 15-passenger cars in the Post Office Tower, Maple Street, London W1 which travel 540 ft 164 m up at up to 1,000 ft/min 304 m/min.

Michael Bracey established an involuntary duration record when trapped in a lift for 59 hr 55 min in Newcastle on Tyne, England on 29 Feb 1980.

Pipeline Longest Oil

The longest crude oil pipeline in the world is the Interprovincial Pipe Line Company's installation from Edmonton, Alberta, Canada to Buffalo, New York State, USA, a distance of 1775 miles 2856 km. Along the length of the pipe 13 pumping stations maintain a flow of 6,900,000 gal 31 367 145 litres of oil per day.

The eventual length of the Trans-Siberian Pipeline will be 2319 miles 3732 km, running from Tuimazy through Omsk and Novosibirsk to Irkutsk. The first 30 mile 48 km section was opened in July 1957.

Submarine pipelines

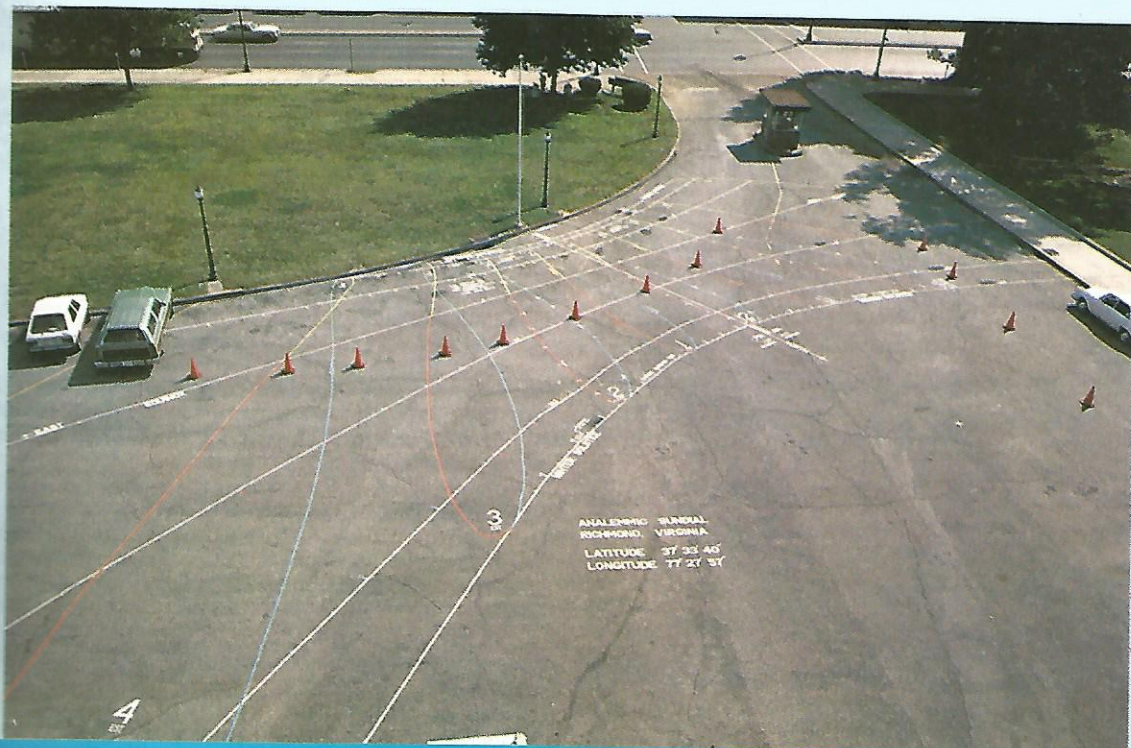
The world's longest submarine pipeline is that of 425 km 264 miles for natural gas from the Union Oil Platform to Rayong, Thailand opened on 12 Sept 1981. The longest North Sea pipeline is the Ekofisk-Emden line stretching 260 miles 418 km and completed in July 1975. The deepest North Sea pipeline is that from the Cormorant Field to Firths Voe, Shetland at 530 ft 162 m.

Natural gas

The longest natural gas pipeline in the world is the Trans-



above: The most complicated and accurate clockwork clock ever built—the Olsen clock in the Copenhagen Town Hall, Denmark. Even the celestial rotation of the poles every 25,753 years is allowed for (see p. 158). *below:* The world's largest sundial in Richmond, Virginia, USA on which the sun's shadow moves at up to 7 in 17,7 cm per minute (see p. 158).



ANALENNIC WANDAL
RICHMOND, VIRGINIA
LATITUDE 37° 33' 46"
LONGITUDE 77° 27' 51"



Thomas Tompion's unique royal year-going spring clock made for King William III (1689–1702) and auctioned by Christie's of London on 14 July 1982 for an all-time record price (see p. 158). (Christie's, London)

Canada Pipeline which by 1974 had 5654 miles 9099 km of pipe up to 42 in 106.6 cm in diameter. The Tyumen–Chelyabinsk–Moscow–Brandenburg gasline stretches 4330 km 2690 miles.

Pipeline Most expensive

The world's most expensive pipeline is the Alaska pipeline running 798 miles 1284 km from Prudhoe Bay to Valdez. By completion of the first phase in 1977 it had cost at least \$6000 million (£3250 million). The pipe is 48 in 1.21 m in diameter and will eventually carry up to 2 million barrels of crude oil per day.

Press Largest

The world's two most powerful production machines are forging presses in the USA. The Loewy closed-die forging press, in a plant leased from the US Air Force by the Wyman-Gordon Company at North Grafton, Massachusetts, USA weighs 9469 tons 9620 tonnes and stands 114 ft 2 in 34.79 m high, of which 66 ft 20.1 m is sunk below the operating floor. It has a rated capacity of 44,600 tons 45 315 tonnes, and went into operation in October 1955. The other similar press is at the plant of the Aluminium Company of America at Cleveland, Ohio. There has been a report of a press in the USSR with a capacity of 75 000 tonnes 73,800 tons at Novo Kramatorsk. The Béch  and Grohs counter-blow forging hammer, manufactured in W. Germany are rated at 60,000 tonnes. The most powerful press in Great Britain is the closed-die forging and extruding press installed in 1967 at the Cameron Iron Works, Livingston, Lothian. The press is 92 ft 28 m tall (27 ft 8.2 m below ground) and exerts a force of 30,000 tons 30 481 tonnes.

Printer Fastest

The world's fastest printer is the Radiation Inc electro-sensitive system at the Lawrence Radiation Laboratory, Livermore, California. High speed recording of up to 30,000 lines each containing 120 alphanumeric characters per minute is attained by controlling electronic pulses through chemically impregnated recording paper which is rapidly moving under closely spaced fixed styli. It can thus print the wordage of the whole Bible (773,692 words) in 65 sec—3333 times as fast as the world's fastest typist.

Radar installation Largest

The largest of the three installations in the US Ballistic Missile

Early Warning System (BMEWS) is that near Thule, in Greenland, 931 miles 1498 km from the North Pole, completed in 1960 at a cost of \$500,000,000 (then £178.5 million). Its sister stations are one at Cape Clear, Alaska, USA, completed in 1961, and a \$115,000,000 (then £41.07 million) installation at Fylingdales Moor, North Yorkshire, completed in June 1963. The largest scientific radar installation is the 21 acre 84 000 m² ground array at Jicamarca, Peru.

Ropeway or telepherique Highest World

The highest and longest aerial ropeway in the world is the Telef rico M rida (M rida t l ferique) in Venezuela, from M rida City (5379 ft 1639.5 m) to the summit of Pico Espejo (15,629 ft 4763.7 m), a rise of 10,250 ft 3124 m. The ropeway is in four sections, involving 3 car changes in the 8 mile ascent in 1 hr. The fourth span is 10,070 ft 3069 m in length. The two cars work on the pendulum system—the carrier rope is locked and the cars are hauled by means of three pull ropes powered by a 230 hp 233 cv motor. They have a maximum capacity of 45 persons and travel at 32 ft 9.7 m per sec (21.8 mph 35.08 km/h). The longest single span ropeway is the 13,500 ft 4114 m long span from the Coachella Valley to Mt San Jacinto (10,821 ft 3298 m), California, USA, inaugurated on 12 Sept 1963.

Great Britain

Britain's longest cabin lift is that at Llandudno, Gwynedd, opened in June 1969. It has 42 cabins with a capacity of 1000 people per hour and is 5320 ft 1621 m in length.

Transformer Largest

The world's largest single phase transformers are rated at 1,500,000 kV of which eight are in service with the American Electric Power Service Corporation. Of these five stepdown from 765 to 345 kV. Britain's largest transformers are those rated at 1,000,000 kVa 400/275 kV built by Hackbridge & Hewitt Co Ltd, Walton-on-Thames, Surrey first commissioned for the CEBG in October 1968.

Transmission lines Longest

The longest span between pylons of any power line in the world is that across the Sogne Fjord, Norway, between Rabnaberg and Fatlaberg. Erected in 1955 by the Whitecross Co Ltd of Warrington, Cheshire, England as part of the high-tension power cable from Refsdal power station at Vik, it has a span of 16,040 ft 4888 m and a weight of 12 tons/tonnes. In 1967 two further high tensile steel/aluminium lines 16,006 ft 4878 m long, and weighing 33 tons 33.5 tonnes, manufactured by Whitecross and BICC were erected here. The longest in Britain are the 5310 ft 1618 m lines built by J. L. Eve Co across the Severn with main towers each 488 ft 148 m high.

Highest

The world's highest are those across the Straits of Messina, with towers of 675 ft 205 m (Sicily side) and 735 ft 224 m (Calabria) and 11,900 ft 3 627 m apart. The highest lines in Britain are those made by BICC at West Thurrock, Essex, which cross the Thames estuary suspended from 630 ft 192 m tall towers at a minimum height of 250 ft 76 m, with a 130 ton 132 tonnes breaking load. They are 4500 ft 1371 m in length.

Highest voltages

The highest voltages now carried are 1,330,000 volts 1224 miles 1970 km on the DC Pacific Inter-tie in the United States. The Ekibastuz DC transmission lines in Kazakhstan, USSR are planned to be 2400 km 1490 miles long with 1,500,000 volt capacity.

Valve Largest

The world's largest valve is the 32 ft 9.75 m diameter, 170 ton/tonne butterfly valve designed by Boving & Co Ltd of London for use at the Arnold Airforce Base engine test facility in Tennessee, USA.

Wire rope Longest and Strongest

The longest wire rope in the world is the stage winder at No 9 shaft Vaal Reefs Gold Mine, South Africa, which measures 15 300 m 9.50 miles installed in July 1979. They were spun at the Haggie Rand Ltd Ropery at Jupiter, Johannesburg. Each of the two ropes weigh 116 tons/tonnes. The thickest ever made are

spliced crane strops from wire ropes 28,2 cm $11\frac{1}{4}$ in thick made of 2392 individual wires in March 1979 by British Ropes Ltd of Doncaster at Willington Quay, Tyneside, designed to lift loads of up to 3000 tons/tonnes.

TIME PIECES

Clock Oldest

The earliest mechanical clock, that is one with an escapement, was completed in China in AD 725 by I Hsing and Liang Ling-tsan.

The oldest surviving working clock in the world is the faceless clock dating from 1386, or possibly earlier, at Salisbury Cathedral, Wiltshire, which was restored in 1956 having struck the hours for 498 years and ticked more than 500 million times. Earlier dates, ranging back to c. 1335, have been attributed to the weight-driven clock in Wells Cathedral, Somerset, but only the iron frame is original. A model of Giovanni de Dondi's heptagonal astronomical clock of 1348-64 was completed in 1962.

Clock Largest World

The world's most massive clock is the Astronomical Clock in the Cathedral of St Pierre, Beauvais, France, constructed between 1865 and 1868. It contains 90,000 parts and measures 40 ft 12,1 m high, 20 ft 6,09 m wide and 9 ft 2,7 m deep. The Su Sung clock, built in China at K'aifeng in 1088-92, had a 20 ton 20,3 tonnes bronze armillary sphere for $1\frac{1}{2}$ tons, 1,52 tonnes of water. It was removed to Peking in 1126 and was last known to be working in its 40 ft 12,1 m high tower in 1136.

Public

The largest four-faced clock in the world is that on the building of the Allen-Bradley Company of Milwaukee, Wisconsin, USA. Each face has a diameter of 40 ft $3\frac{1}{2}$ in 12,28 m with a minute hand 20 ft 6,09 m in overall length. The tallest four-faced clock in the world is that of the Williamsburgh Savings Bank in Brooklyn, New York City, NY, USA. It is 430 ft 131 m above street level.

Great Britain

The largest clock in the United Kingdom is that on the Royal Liver Building (built 1908-11) with dials 25 ft 7,62 m in diameter and the 4 minute hands each 14 ft 4,26 m long. The mechanism and dials weigh 22 tons and are 220 ft 67 m above street level.

Longest stoppage 'Big Ben'

The longest stoppage of the clock in the House of Commons clock tower, London since the first tick on 31 May 1859 has been 13 days from noon 4 Apr to noon 17 Apr 1977. In 1945 a host of starlings slowed the minute hand by 5 min.

Clock Most accurate

The most accurate and complicated clockwork in the world is the Olsen clock, installed in the Copenhagen Town Hall, Denmark. The clock, which has more than 14,000 units, took 10 years to make and the mechanism of the clock functions in 570,000 different ways. The celestial pole motion of the clock will take 25,753 years to complete a full circle and is the slowest moving designed mechanism in the world. The clock is accurate to 0.5 sec in 300 years—50 times more accurate than the previous record.

Clock Most expensive

The highest auction price for any English-made clock is £110,000 for a Thomas Tompion (1639-1713) bracket clock at Christie's in London on 2 June 1980.

Watch Oldest

The oldest watch (portable clockwork time-keeper) is one made of iron by Peter Henlein in Nürnberg (Nuremberg), Bavaria, Germany, in c. 1504 and now in the Memorial Hall, Philadelphia, Pennsylvania, USA. The earliest wrist watches were those of Jaquet-Droz and Leschot of Geneva, Switzerland, dating from 1790.

Watch Smallest

The smallest watches in the world are produced by Jaeger Le Coultre of Switzerland. Equipped with a 15-jewelled movement

they measure just over $\frac{1}{2}$ in. 1,2 cm long and $\frac{3}{16}$ in. 0,476 cm width. The movement, with its case, weighs under 0.25 oz 7 g.

Watch Thinnest

The world's thinnest wrist watch is the Concord Delirium IV. It measures 0,98 mm 0.0385 in thick and retailed for \$16,000 £6800 (including 18 carat gold strap) in June 1980.

Watch Most expensive

Excluding watches with jewelled cases, the most expensive standard men's pocket watch is the Swiss *Grande Complication* by Audemars-Piguet which retailed for £52,000 in May 1982. The *Kallista* watch with 130 carats of precious stones by Vacheron et Constantin of Geneva was valued in Apr 1981 at \$5 million (then £2,272,000). The record price for an antique watch is \$166,300 (then £75,600) paid to Capt. Peter Belin USN by L. C. Mannheimer of Zurich at Sotheby Parke Bernet, New York on 29 Nov 1979 for a gold studded case watch of c. 1810 by William Anthony of London.

Time measurer Most accurate World

The most accurate time-keeping devices are the twin atomic hydrogen masers installed in 1964 in the US Naval Research Laboratory, Washington, DC. They are based on the frequency of the hydrogen atom's transition period of 1,420,450,751,694 cycles/sec. This enables an accuracy to within 1 sec in 1,700,000 years.

Sundial Largest

The world's largest sundial is one with a 25 ft 7,62 m gnomon and a readable shadow of 125 ft 38,1 m installed by Walter R. T. Witschey at the Science Museum of Virginia at Richmond, Va on 12 Mar-3 May 1981. The sun's shadow travels 7 in 17,7 cm per minute at the equinox.

COMPUTERS

The earliest electronic (valve) computer was Colossus. It was run in 1943 at Bletchley Park, Hertfordshire to break the German coding machine Enigma. It arose from the concept published in 1936 by Dr Alan Mathison Turing OBE, FRS (1912-54).

Computers were greatly advanced by the invention of the point-contact transistor by John Bardeen and Walter Brattain announced in July 1948, and the junction transistor by R. L. Wallace, Morgan Sparks and Dr William Shockley in early 1951. The microcomputer was invented in 1969-73 by M. E. Hoff Jr of Intel Corporation with the production of the micro-processor silicon chip '4004'.

The computer planned to be the world's biggest by a factor of 40 is the \$50 million NASF (Numerical Aerodynamic Simulation Facility) at NASA's Ames Research Center, Palo Alto, California. The tenders from CDC and Burroughs called for a capacity of 12.8 gigaflops (12,800 million complex calculations per second).

Most powerful and Fastest World

The world's most powerful and fastest computer is the CRAY-1, designed by Seymour R. Cray of Cray Research, Inc, Minneapolis, Minnesota. The clock period is 12.5 nanoseconds and memory ranges up to 1,048,576 64-bit words, resulting in a capacity of 8,388,608 bytes of main memory. (N.B. a 'byte' is a unit of storage compressing 8 'bits' collectively equivalent to one alphabetic symbol or two numerals.) It attains speeds of 200 million floating point operations per second. With 32 CRAY DD-19 disk storage units, it has a storage capacity of 7.7568×10^{10} bits. The cost of a mid-range system was quoted in mid-1979 as about \$8.8 million (then £4 million). The most powerful British computer is the International Computer's Distribution Array Processor - the ICL DAP.

Control Data Corporation announced the CYBER Model 205-444 system from Arden Hill, Minnesota, USA on 2 June 1980 which has a memory of 4 million 64-Bit words and cost \$16.5 million (£7 million) at delivery in January 1981.

The CRAY - 1/S system, introduced in 1981, has an additional 8 million words of buffer memory and a storage capacity of 19 gigabytes or 1.55136×10^{11} bits with a system cost of up to \$17 million for the maximum configuration.

1. COMMERCE

The \$(US) has in this chapter been converted at a fixed mean rate of \$1.80 to the £ Sterling and at the relevant rates for other dates.

Oldest industry

Agriculture is often described as 'the oldest industry in the world', whereas in fact there is no evidence that it was practised before c. 11,000 BC. The oldest known industry is flint knapping, involving the production of chopping tools and hand axes, dating from about 1,750,000 years ago.

Oldest company World

The oldest company in the world is the Faversham Oyster Fishery Co, referred to in the Faversham Oyster Fishing Act 1930, as existing 'from time immemorial', i.e. in English law from before 1189. The Shore Porters' Society of Aberdeen, a haulier, shipping and warehouse partnership, is known to have been established before 4 June 1498.

Great Britain

The Royal Mint has origins going back to AD 287. The Oxford University Press celebrated the 500th anniversary of its origins in 1478 in 1978. The Whitechapel Bell Foundry of Whitechapel Road, London, E1, has been in business since 1570. The retail business in Britain with the oldest history is the Cambridge bookshop, which, though under various ownership, has traded from the site of 1 Trinity Street since 1581 and since 1907 under its present title Bowes & Bowes. R. Durtnell & Sons, builders, of Brasted, Kent, has been run by the same family since 1591. Mr Richard Durtnell is of the 12th generation. The first bill of adventure signed by the English East India Co, was dated 21 Mar 1601.

Greatest assets World

The business with the greatest amount in physical assets is the Bell System, which comprises the American Telephone and Telegraph Company, with headquarters at 195 Broadway, New York City, NY, USA, and its subsidiaries. The Bell System's total assets on the consolidated balance sheet at 28 Feb 1982 were valued at \$138,819,000,000 (then £77,122 million). The plant involved included more than 142 million telephones. The number of employees is 1,036,000. A total of 20,109 shareholders attended the Annual Meeting in April 1961, thereby setting a world record.

The first company to have assets in excess of \$1 billion was the United States Steel Corporation with \$1400 million (then £287.73 million) at the time of its creation by merger in 1900.

Great Britain

The biggest British industrial company is Imperial Chemical Industries Ltd with assets employed of £5211 million as at 31 Dec 1981. Its staff and payroll averaged 132,000 during the year. The company, which has more than 300 UK and overseas subsidiaries, was formed on 7 Dec 1926 by the merger of four concerns—British Dyestuffs Corporation Ltd; Brunner, Mond & Co Ltd; Nobel Industries Ltd and United Alkali Co Ltd. The first chairman was Sir Alfred Moritz Mond (1868–1930), later the 1st Lord Melchett.

The net assets of The 'Shell' Transport and Trading Company, plc, at 31 Dec 1981 were £5,295,000,000, comprising mainly its 40 per cent share in the net assets of the Royal Dutch/Shell Group of Companies which stood at £13,184 million. Group companies employ 166,000. 'Shell' Transport was formed in 1897 by Marcus Samuel (1853–1927), later the 1st Viscount Bearsted.

Greatest profit and loss

The greatest net profit ever made by any corporation in 12 months is \$7092 million (£3940 million) by American Telephone and Telegraph Co from 1 Mar 1981 to 28 Feb 1982.

The greatest loss ever recorded by private enterprise in a year was \$1710 million (£777.2 million) by the car making Chrysler Corporation in 1980. On 7 July 1981 British Steel chairman Sir Ian MacGregor announced a loss of £668 million in 1980–81 or £1270 per minute or £5520 *per caput* for the remaining 121,000 workers.

9. The Business World

GUINNESS BOOK OF RECORDS



United Kingdom's largest hotel, catering and leisure group

Greatest sales

The first company to surpass the \$1 billion (US) mark in annual sales was the United States Steel Corporation in 1917. Now there are over 500 corporations with sales exceeding £1000 million including 300+ from the United States. The list is headed by the Exxon Corporation of New York with \$108,108,000,000 (£60,060,000,000) in 1981.

The top gross profits in the United Kingdom in *The Times* 1000 1981-82 was British Petroleum with £5293 million. The biggest loss maker in *The Times* 1000 1981-82 was Scott Lithgow with £31,854,000.

Biggest work force

The greatest payroll of any single civilian organisation in the world is that of the USSR National Railway system with a total work force of 2,031,200 in 1976.

Largest take-over

The largest corporate cash take-over in commercial history has been the bid of \$3650 million (£1660 million) by Shell Oil for the stock of Belridge Oil.

Largest merger

The largest ever merger agreement signed has been that between Du Pont and Co. and Conoco Inc. at 1 am in Stamford, Connecticut on 6 July 1981 involving \$7300 million in cash and stock for the latter.

Biggest write off

The largest reduction of assets in the history of private enterprise was the \$800 million £347 million write off of Tristar aircraft development costs announced on 23 Nov 1974.

Greatest Bankruptcy

William G. Stern (b. Hungary, 1936) of Golders Green, north London, a US citizen since 1957, who set up Wilstar Group Holding Co in the London property market in 1971 was declared bankrupt for £104,390,248 in February 1979. His application to be discharged on an offer to pay £55,000 over 3 years was rejected by the Appeal Court as 'impudent' in March 1982.

Companies

The number of companies on the register in Great Britain at 31 Dec 1981 was 871,391 of which 9206 were public and the balance private companies.

Most directorships

The record for directorships was set in 1961 by Hugh T. Nicholson, formerly senior partner of Harmood Banner & Co, London who, as a liquidating chartered accountant, became director of all 451 companies of the Jasper group in 1961 and had 7 other directorships.

Advertising agency

The largest advertising agency in 1981, as listed in *Advertising Age*, is Dentsu Incorporated of Japan with estimated billings of \$3036 million (£1687 million). *Advertising Age* ranks Saatchi and Saatchi Compton Ltd No 1 in Britain with 1981 billings of \$340,000,000 (£200,000,000).

Biggest advertiser

The world's biggest advertiser is Sears Roebuck and Co, with \$633,000,000 (£351 million) in 1981 excluding its catalogue.

Aircraft manufacturer

The world's largest aircraft manufacturer is the Boeing Company of Seattle, Washington, USA. The corporation's sales totalled \$9,788,200,000 (£5438 million) in 1981 and it had 96,000 employees and assets valued at \$6,953,700,000 (then £3863 million) at 1 Jan 1982. Cessna Aircraft Company of Wichita, Kansas, USA, in the year 1981, had total sales of \$1,060,097,000 (then £588.9 million). The company has produced more than 171,500 aircraft since Clyde Cessna's first was built in 1911.

Airline Largest

The largest airline in the world is the USSR State airline 'Aeroflot', so named since 1932. This was instituted on 9 Feb 1923, with the title of Civil Air Fleet of the Council of Ministers of the

USSR, abbreviated to 'Dobrolet'. It operates 1300 aircraft over about 560,000 miles 900 000 km of routes, employs 500,000 people and carried 106 million passengers to 97 countries in 1981. Most luggage is 'self-handled'. Smoking is allowed only after 4 hours flying. The commercial airline carrying the greatest number of passengers (April 1981) was Eastern Airlines of Miami, Florida, USA (formed 1928) with 35,515,000 passengers. The company had 37,700 employees and a fleet of 275 jet planes. In March 1982 British Airways were operating a fleet of 158 aircraft (including 39 helicopters). Staff employed on airline activities totalled 43,221 and 15.3 million passengers were carried in 1981 on 358,976 miles 577,718 km of unduplicated routes.

Oldest

The oldest existing national airline is Koninklijke-Luchtvaart-Maatschappij NV (KLM) of the Netherlands, which opened its first scheduled service (Amsterdam-London) on 17 May 1920, having been established on 7 Oct 1919. One of the original constituents of BOAC, Handley-Page Transport Ltd, was founded in May 1919 and merged into Imperial Airways in 1924. Delag (Deutsche Luftschiffahrt AG) was founded at Frankfurt am Main on 16 Nov 1909 and started a scheduled airship service in June 1910. Chalk's International Airline has been flying amphibians between Miami, Florida and the Bahamas since July 1919. Albert 'Pappy' Chalk flew from 1911 to 1975.

Aluminium producer

The world's largest producer of primary aluminium is the Aluminum Company of America (Alcoa) of Pittsburgh, USA with its affiliated companies. The company had an output of 1 792 000 tonnes 1 763 686 tons in 1981. The Aluminum Company of Canada Ltd owns the largest aluminium smelter in the western world, at Arvida, Quebec, with a capacity of 475,000 short tons 431 000 tonnes per annum. The parent company Alcan's total sales for the year 1981 were \$4978 million (then £2765 million).

Art auctioneering

The largest and oldest firm of art auctioneers in the world is the Sotheby Parke Bernet Group of London and New York, founded in 1744. The turnover in 1980-81 was \$594,042,400 (£330,023,550). The highest total for any house sale auction was theirs on 18-27 May 1977 at the 6th Earl of Rosebery's home at Mentmore, Buckinghamshire which reached £6,389,933 or \$10.9 million. HM Government had turned down an offer of £2 million. The total realized at the Robert von Hirsch art sale at Sotheby's, London on 20-27 June 1978 was £18,468,348 (then \$36 million).

Bank

The International Bank for Reconstruction and Development (founded 27 Dec 1945), the 'World Bank', a United Nations specialised agency, at 1818 H Street NW, Washington, DC, USA, has an authorized share capital of \$81.1 billion (£19,545 million). There were 139 members with a subscribed capital of \$36,614 million (£20,341 million) at 30 June 1981. The International Monetary Fund in Washington, DC, USA has 145 members with total quotas of SDR 60,684.8 million (\$67,547.6 million or £37,526 million) at 31 March 1982.

The private commercial bank with the greatest deposits is the Bank of America National Trust and Savings Association, of San Francisco, California, USA, with \$94,369,453,000 (£52,427,473,000) at 31 Dec 1981. Its total assets were \$121,158,350,000 (£67,310,190,000). Barclays Bank (with Barclays Bank International and other subsidiary companies) had some 5300 branches and offices in over 80 countries (3200 in the United Kingdom) in December 1981. Deposits totalled 42,834 million and assets £48,752 million. The largest bank in the United Kingdom is the National Westminster with total assets of £43,304,000,000 and 3213 branches as at 31 Dec 1981. The bank with most branches is The State Bank of India with 8810 on 1 Jan 1982 with assets of £10.764 million.

Bank building

The world's tallest bank building is the Bank of Montreal's First Bank Tower, Toronto, Canada which has 72 stories and stands 935 ft 284.98 m. The largest bank vault in the world, measuring 350 x 100 x 8 ft 106.7 x 30.4 x 2.4 m and weighing 879 tons

893 tonnes is in the Chase Manhattan Building, New York City, completed in May 1961. Its six doors weigh up to 40 tons 40,6 tonnes apiece but each can be closed by the pressure of a forefinger.

Banquet Greatest Outdoors

The greatest banquet ever staged was that by President Loubet, President of France, in the gardens of the Tuileries, Paris, on 22 Sept 1900. He invited the mayors of France and their deputies ending up with 22,295 guests. With the Gallic *penchant* for round numbers, the event has always been referred to as 'le banquet des 100,000 maires'. It was estimated that some 30,000 attended a military feast at Radewitz, Poland on 25 June 1730 thrown by King August II (1709-33).

Indoors

The greatest number of people served indoors at a single sitting was 18,000 municipal leaders at the Palais de l'Industrie, Paris on 18 Aug 1889.

Most expensive

The menu for the main 5½ hr banquet at the Imperial Iranian 2500th Anniversary gathering at Persepolis in October 1971 was probably the most expensive ever compiled. It comprised quail eggs stuffed with Iranian caviar, a mousse of crayfish tails in Nantua sauce, stuffed rack of roast lamb, with a main course of roast peacock stuffed with *foie gras*, fig rings and raspberry sweet champagne sherbet, with wines including *Château Lafite-Rothschild* 1945 at £40 per bottle from the cellars of Maxime, Paris.

Book shop

The book shop with most titles and the longest shelving (30 miles 48 km) in the world is W. & G. Foyle Ltd, City of Westminster, Greater London. First established in 1904 in a small shop in Islington, the company is now at 119-125 Charing Cross Road. The area on one site is 75,825 ft² 7 044 m². The most capacious individual bookstore in the world measured by square footage is Barnes & Noble Bookstore of Fifth Ave at 18th Street, New York City, USA with 154,250 ft² 14 330 m² and with 12.87 miles 20,71 km of shelving.

The world's largest second-hand booksellers are Richard Booth (Bookseller) Ltd, of Hay-on-Wye, Powys, Wales with 9.9 miles 15,93 km of shelving and a running stock of 900,000 to 1,100,000 in 30,091 ft² 2 795 m² of selling space.

Brewer Oldest

The oldest brewery in the world is the Weiherstephan Brewery, Freising, near Munich, W. Germany, founded in AD 1040.

Largest World

The largest single brewer in the world is Anheuser-Busch, Inc in St Louis, Missouri, USA. In 1981 the company sold 54,500,000 US barrels, equivalent to 15,248 million Imp. pints, the greatest annual volume ever produced by a brewing company. The company's St Louis plant covers 100 acres 40,5 ha and after completion of current modernization projects will have an annual capacity in excess of 13,000,000 US barrels 3637 million Imp. pints. The largest brewery on a single site is Adolph Coors Co of Golden, Colorado, USA where 13.2 million barrels 3693 million Imp. pints were sold in 1981.

Europe

The largest brewery in Europe is the Guinness Brewery at St James's Gate, Dublin, Ireland, which extends over 56.15 acres 22,72 ha. The business was founded in 1759.

Great Britain

The largest brewing company in the United Kingdom based on its 7743 public houses, 970 off-licences and 105 hotels, is Bass plc. The company has net assets of £1,157,100,000, controls 13 breweries and has 75,000 employees (including bar-staff). Their sales figure for the year ending 30 Sept 1981 was £1,712,600,000. The company has leisure and betting interests.

Greatest exports

The largest exporter of beer, ale and stout in the world is Arthur Guinness & Son plc, of Dublin, Ireland. Exports of Guinness from the Republic of Ireland in the 52 weeks ending 13 Mar 1982

were 841,609 bulk barrels (bulk barrel = 36 Imperial gallons), which is equivalent to 1,331,777 half pint glasses (1,261,329 30-centilitre glasses) per day.

Brickworks

The largest brickworks in the world is the London Brick plc plant at Stewartby, Bedfordshire. The works, established in 1898, now cover 221 acres 90 ha and have a production capacity of 13,000,000 bricks and brick equivalent each week.

Building contractors

The largest construction company in the United Kingdom is George Wimpey plc (founded 1880), of London, who undertake building, civil, mechanical, electrical and chemical engineering work. With 37,000 employees worldwide the turnover of work was £1101 million in over 30 countries in 1981.

Building societies

The biggest building society in the world is the Halifax Building Society of Halifax, West Yorkshire. It was established in 1853 and has total assets exceeding £12,000,000,000. It has 9835 employees and over 2000 offices.

Chemist shop chain

The largest chain of chemist shops in the world is Boots The Chemists, which has 1083 retail branches. The firm was founded by Jesse Boot (b. Nottingham, 1850), later the 1st Baron Trent, who died in 1931.

Chocolate factory

The world's largest chocolate and confectionary factory is that built by Hershey Foods Corp in Hershey, Pennsylvania, USA in 1903-5. It now has 2,000,000 ft² 185,800 m² of floor space.

Computer company

The world's largest computer firm is International Business Machines (IBM) Corporation of New York which resisted from 1969 the Justice Department's largest anti-trust suit. This was withdrawn on 8 Jan 1982 as 'without merit'. In 1981 assets were \$29,586,000,000 (£16,437 million) and sales were \$29,070,000,000 (£16,150 million). In Oct 1979 it made the largest public borrowing in corporate history with \$1 billion.

Department stores World

F. W. Woolworth, who celebrated their centenary year in 1979, now operate a total of 6927 stores world wide. Frank W. Woolworth opened his first Five and Ten Cent Store in Utica, New York State on 22 Feb 1879. The 1981/82 earnings are \$82 million (£45,555,555).

Great Britain

The largest department store in the United Kingdom is Harrods Ltd of Knightsbridge, Royal Borough of Kensington and Chelsea, Greater London named after Henry Charles Harrod, who opened a grocery in Knightsbridge Village in 1849. It has a total selling floor space of 16 acres 6,4 ha, employs 4000 people and had a total of 15,753,000 transactions in 1981.

Highest sales per unit area

The department store with the fastest-moving stock in the world is the Marks & Spencer premier branch, known as 'Marble Arch' at 458 Oxford Street, City of Westminster, Greater London. The figure of £900 worth of goods per square foot of selling space per year is believed to be an understatement. The selling area is 90,400 ft² 8398 m². The company has 257 branches in the UK and operates on over 6 million ft² 558 000 m² of selling space and now has stores on the Continent and Canada.

Distillery

The world's largest distilling company is The Seagram Company Ltd, of Canada. Its sales in the year ending 31 July 1981 totalled US \$2,772,733,000 (£1540 million) of which \$2,237,189,000 (£1242 million) were from sales by Joseph E. Seagram & Sons, Inc in the United States. The group employs about 16,000 people, including about 11,000 in the United States.

The largest of all Scotch whisky distilleries is Carsebridge at Alloa, Central Region, Scotland, owned by Scottish Grain Distillers Limited. This distillery is capable of producing more

than 40,000,000 litres 8,796,000 gal of alcohol per annum. The largest establishment for blending and bottling Scotch whisky is owned by John Walker & Sons Limited at Kilmarnock, Strathclyde, where over 3 million bottles are filled each week. 'Johnnie Walker' is the world's largest-selling brand of Scotch whisky. The largest malt Scotch whisky distillery is the Tomatin Distillery, Highland, established at 1028 ft 313 m above sea level in 1897, with an annual capacity of 5.0 million proof gallons. The world's largest-selling brand of gin is Gordon's.

Fisheries

The world's highest recorded catch of fish was 65 700 000 tonnes in 1973. Peru had the largest ever national haul with 12 160 000 tonnes in 1970 comprising mostly anchoveta. The United Kingdom's highest figure was 1 206 000 tonnes in 1948.

Largest net

The largest net yet manufactured is one that can fish 6.8 million m³ 8.8 million yd³ per hour announced from W. Germany in March 1974.

Grocery stores

The largest grocery chain in the world is Safeway Stores, Incorporated of Oakland, California, USA with sales in 1981 of \$16,580,318,000 (£9211 million) and total current assets valued at \$1,464,203,000 (£813 million) as at 2 Jan 1982. The company has 2477 stores totalling 65,483,000 ft² 6 000 000 m². The total number of employees is 157,411.

Hotelier

The top revenue-earning hotel business is Holiday Inns Inc, with a 1981 revenue of \$4300 million (£2380 million), from 1750 hotels (310,000 rooms) at 31 Dec 1981 in 57 countries. The business was founded by Charles Kemmons Wilson with his first inn in Summer Avenue, Memphis, Tennessee in 1952.

Insurance

It was estimated in 1978 that the total premiums paid in the United States first surpassed \$100 billion (then £52,600 million) or \$1,400 £736 per household. The company with the highest volume of insurance in force in the world is the Prudential Insurance Company of America of Newark, New Jersey with \$456,175 million (£253,430 million) at 31 Dec 1981, which is twice the UK National Debt figure. The admitted assets are \$62,499 million (£34,727 million).

Great Britain

The largest life assurance company in the United Kingdom is the Prudential Corporation plc. At 1 Jan 1982 the tangible assets were £11,459,200,000 and the total amount assured was £53,650,600,000.

Life policies Largest

The largest life assurance policy ever written was one for \$44 million (£244 million) for a Calgary land developer revealed in February 1982 by Trans America Occidental Life Assurance Co. of California. The salesman was local manager Lorenzo F. Reges.

Highest pay-out

The highest pay-out on a single life has been some \$18 million (then £7.5 million) to Mrs Linda Mullendore, wife of an Oklahoma rancher, reported on 14 Nov 1970. Her murdered husband had paid \$300,000 in premiums in 1969.

Marine

The largest ever marine insurance loss was the 153,480 grt VLCC (Very Large Crude Carrier), *Energy Determination*. This vessel which was insured at Lloyds and valued at £26.8 million, exploded in the strait of Hormuz on 12 Dec 1979. The 83,000 grt LNG (Liquid Natural Gas) Carrier *Aquarius* built in 1977 by General Dynamics Corporation, Massachusetts, USA is currently insured for \$175 million £103 million. This vessel is owned by Wilmington Trust Company, Delaware, USA, and chartered to the Burmah Oil Co., Ltd.

The largest sum claimed for consequential losses is \$1700 million against owning, operating and building corporations, and

Claude Phillips resulting from the 66 million gallon oil spill from M. T. *Amoco Cadiz* on the Brittany Coast on 16 Mar 1978.

A claim for \$300 million (then £127.6 million) was provisionally agreed by Lloyd's on 31 July 1980 in connection with alleged structural defects in three liquefied natural gas carriers being built for El Paso Natural Gas at Avondale Shipyards, New Orleans, Louisiana, USA.

Land Owner

The world's largest landowner is the United States Government with a holding of 769,863,000 acres (1,203,000 miles 3 116 000 km²) which is more than the area of the world's 8th largest country Argentina and 12.8 times larger than the United Kingdom. The world's largest private landowner is reputed to be International Paper Co with 9 million acres 3,64-million ha. The United Kingdom's greatest ever private landowner was the 3rd Duke of Sutherland, George Granville Sutherland-Leveson-Gower, KG (1828-92), who owned 1,358,000 acres 549 560 ha in 1883. Currently the largest landholder in Great Britain is the Forestry Commission (instituted 1919) with 3,123,340 acres 1264 000 ha. Currently the landowner with the largest known acreage is the 9th Duke of Buccleuch (b. 1923) with 336,000 acres 136,035 ha. The longest tenure is that by St Paul's Cathedral of land at Tillingham, Essex, given by King Ethelbert before AD 616.

Value Highest

The world's most expensive land is in Kowloon, Hong Kong. In August 1981 the Carrian Group bought the 85,000 ft² 7895 m² Miramar Hotel site for £263 million or £3104 per ft². The freehold price for a grave site with excellent *Fung Shui* in Hong Kong may cost HK\$200,000 for 4 ft × 10 ft or £19,400 per ft². The real estate value per square metre of the two topmost French vineyards, Grande and Petite Cognac vineyards in Bordeaux, has not been recently estimated. The China Square Inch Land Ltd at a charity auction on 2 Dec 1977 sold 1 cm² 0.155 m² of land at Sha Tau Kok for HK\$2000 (the equivalent of US\$17,405,833,737 per acre). The purchasers were Stephen and Tony Nicholson. The most expensive land in Britain is that in the City of London. The freehold price on small prime sites reached £1950/ft² (£21,230/m²) in mid 1973.

Greatest auction

The greatest auction was that at Anchorage, Alaska on 11 Sep 1969 for 179 tracts comprising 450,858 acres 182 455 ha of the oil-bearing North Slope, Alaska. An all-time record bid of \$72,277,133 for a 2560 acre 1036 ha lease was made by the Amerada Hess Corporation—Getty Oil consortium. The \$30,115,472 bid indicated a price of \$28,233 (then £11,763) per acre.

Highest rent

The highest rentals in the world for prime sites, according to *World Rental Levels* by Richard Ellis of London, are in Hong Kong at HK\$288 (£30.58) just ahead of Manhattan, New York at \$60.00 (£29.89) and London £28.00 per square foot. With added service charges and rates London is top with £45.75.

Lowest rent

The rent for a 3 room apartment in the Fuggerei in Augsburg, West Germany, since it was built by Jacob Fugger in 1519, has been 1 Rhine guilder, now 1.72 DMk or 31½p. Fugger was the 'millionaire' philanthropist who pioneered social welfare.

Mineral water

The world's largest mineral water firm is Source Perrier, near Nîmes, France with an annual production of more than 2,100,000,000 bottles, of which 1,200,000,000 now come from Perrier and Contrexeville. The French drink about 50 litres 88 pt of mineral water per person per year.

Motor car manufacturer Largest World

In 1980 Japan with 11,043,000 vehicles overtook the USA as the world's No 1 motor manufacturer. The largest manufacturing company in the world is General Motors Corporation of Detroit, Michigan, USA. During 1981 worldwide sales totalled \$62,698,500,000 (£34,832 million). Its assets at 31 Dec 1981 were valued at \$13,716,100,000 (£7620 million). Its total 1981 payroll was \$19,257,000,000 (£10,698 million) to an average of 741,000 employees. Dividends paid in 1980 were \$1,874,100,000 (£1,041,166,600).

Great Britain

The largest British manufacturer was BL Ltd with 517,000 vehicles produced and a sales turnover of £2869 million of which £1385 million was overseas sales in 180 markets in 1981. Direct exports were £884 million.

Largest plant

The largest single automobile plant in the world is the Volkswagenwerk, Wolfsburg, West Germany, with 59,000 employees and a capacity for about 4000 vehicles daily. The surface area of the factory buildings is 368 acres 149 ha and that of the whole plant 4895 acres 1980 ha with 43.5 miles 70 km of rail sidings.

Salesmanship

The all-time record for automobile salesmanship in units sold individually is 1425 in 1973 by Joe Girard of Detroit, USA, author of *How to Sell Anything to Anybody*, winner of the No. 1 Car Salesman title each year in 1966-77. His lifetime total of one-at-a-time 'belly to belly' selling was 13,001 sales, all retail. He retired on 1 Jan 1978 to teach others his art and has now had published *How to Sell Yourself*.

Oil company

The world's largest oil company is the Exxon Corporation (formerly Standard Oil Company [New Jersey]), with 180,000 employees and assets valued at \$62,931,055,000 (£34,961 million) on 1 Jan 1982. The least successful oil company is Magellan Petroleum Corp (founded 1957) which in 1981 marked its 23rd consecutive year without a dividend. The micawberesque shareholders complained that accumulated losses had then reached \$15 million (£8.3 million).

Oil refineries Largest

The world's largest refinery has been the Amerada Hess refinery in St Croix, Virgin Islands with an annual capacity of 34 million tonnes 33.46 million tons. The largest oil refinery in the United Kingdom is the Esso Refinery at Fawley, Hampshire. Opened in 1921 and much expanded in 1951, it has a capacity of 15.6 million tonnes/tons per year. The total investment together with the associated chemical plant, on the 1300 acre 526 ha site is £280 million. The area occupied by the Shell Stanlow Refinery at Ellesmere Port, Cheshire, founded in 1922, and now with a capacity of 18 million tonnes per year, is 2000 acres 810 ha.

Paper mills

The world's largest paper mill is that established in 1936 by the Union Camp Corporation at Savannah, Georgia, USA, with an all-time record output in 1980 of 1,038,656 short tons 942 246 tonnes. The largest paper mill in the United Kingdom is the Bowaters Kemsley Mill near Sittingbourne, Kent with a complex covering an area of 260 acres 105 ha and a capacity in excess of 371,000 tons/tonnes a year.

Pharmaceuticals

Hoechst of West Germany is the world's largest pharmaceutical company and is one of the world's largest 3 chemical companies with a turnover of DM34,432 million (£8000 million) in 1981. Britain's largest drug and food turnover in 1980-81 was by Glaxo with £710.5 million.

Photographic store

The photographic store with the largest selling area is Jessop of Leicester Ltd's Photo Centre, Hinckley Road, Leicester opened in June 1979 with an area now of 27,000 ft² 2508 m².

Pop-corn plant

The largest pop-corn plant in the world is The House of Clarks Ltd (instituted 1933) of Dagenham, Essex, which in 1980-81 produced 60,000,000 packets of pop-corn.

Public relations

The world's largest public relations firm is Hill and Knowlton, Inc of 420 Lexington Avenue, New York City, NY, USA and sixteen other North American cities. The firm employs a full-time staff of more than 1000 and also maintains offices in 27 overseas cities.

The world's pioneer public relations publication is *Public Relations News*, founded by Mrs Denny Griswold in 1944 and which now circulates in 86 countries.

Publishing

The publishing company generating most net revenue is Time Inc of New York City with \$3296 million (£1831.1 million) in 1981. Britain's largest publisher is the International Publishing Corporation Ltd, a subsidiary of Reed International Ltd, with a publishing turnover of £480 million as at March 1982. The largest educational book publishing concern in the world is the Book Division of McGraw-Hill Inc of New York with sales of \$377,703,000 (£209.8 million) in 1981 with 1164 new titles.

Restaurateurs

The largest restaurant chain in the world is that operated by McDonald's Corporation of Oakbrook, Illinois, USA, founded on 15 April 1955 in Des Plaines, Chicago by Ray A. Kroc BH (Bachelor of Hamburgerology). By 1 Jan 1982 the number of McDonald's restaurants licensed and owned in 29 countries and 3 US territories reached 6753, with an aggregate throughput of 40 billion 100 per cent beef hamburgers under the motto 'Q.S.C. & V.'—for quality, (fast) service, cleanliness and value. Sales systemwide in 1981 were \$7,128,602,000 million (£3960 million). The largest hotel, catering and leisure group in the world is Trusthouse Forte who employ up to 50,000 full and part-time staff in the UK, 14,000 overseas, and who had a turnover of £833,100,000 in 1980-81. They have 813 hotels world-wide.

Fish and chip restaurant

The world's largest fish and chip shop is Harry Ramsden's, White Cross, Guiseley, West Yorkshire with 180 staff serving 1,600,000 customers per annum, who consumed 290 tons of fish and 450 tons of potatoes.

Retailer

The largest retailing firm in the world is Sears, Roebuck and Co (founded by Richard Warren Sears in North Redwood railway station, Minnesota in 1886) of Chicago, Illinois, USA. World-wide revenues were \$27,357,000,000 (£15,198 million) in the year ending 31 Dec 1981 when its merchandise group had 851 retail stores, 1227 catalogue, retail and telephone sales offices and 1527 independent catalogue merchants in the USA and total assets valued at \$34,509,000,000 (£19,172 million).

Ship-building

In 1981 there were 16,931,719 tons gross of ships, excluding sailing ships, barges and vessels of less than 100 tons, completed throughout the world. The figures for Romania and People's Republic of China are incomplete. Japan completed 8,399,831 tons gross (49.61 per cent of the world total). The United Kingdom ranked eighteenth with 212,692 tons gross. The world's leading shipbuilding firm in 1981 was the Mitsubishi Heavy Industries Co of Japan, which completed 29 vessels of 1,013,318 gross tons. Physically the largest ship yard in the United Kingdom is Harland and Wolff Ltd of Queen's Island, Belfast, which covers some 300 acres 120 ha.

Shipping line

The largest shipping owners and operators in the world are Exxon Corporation (see left) whose fleets of owned/managed and chartered tankers in 1981 totalled a daily average of 23,470,000 deadweight tons.

Shopping centre

The world's first shopping centre was Roland Park Shopping Center, Baltimore, Maryland built in 1896. The world's largest shopping centre is the Del Amo Fashion Center, Torrance, California with 2,542,199 ft² 236 170 m² or 58.36 acres under one roof. It was opened in Oct 1981. The world's largest wholesale merchandise mart is the Dallas Market Center, located on Stemmons Freeway, Dallas, Texas, USA with more than 7 million ft² 650 300 m² in 6 buildings. The complex covers 135 acres 54 ha with some 3200 permanent showrooms displaying merchandise of more than 22,000 manufacturers. The center attracts 600,000 buyers each year to its 30 annual markets and trade shows. The largest shopping centre in Britain is the Manchester Arndale Centre which has a floor area of 2,246,200 ft² 208 672 m² including the 481,300 ft² 44 713 m² car park for 1800 cars.

Soft drinks

The world's most profitable soft drink is Coca-Cola with over 250,000,000 drinks sold per day by the end of 1981 in more than 147 countries. Coke was launched as a tonic by Dr John S. Pem-



above: The most valuable suit of armour ever auctioned. The suit made by William Pickering at Greenwich, London in 1610-1613 for the Duke of Brunswick fetched £418,000 in 1981 (see p. 165). (Christies) below: The world's most expensive cloth Shatoosh, which, when available, retails at £555 (\$1000) per yard (see p. 167).



berton of Atlanta, Georgia in 1886. The Coca-Cola Company was formed in 1892 and the famous bottle was patented in 1915.

Steel company World

The world's largest producer of steel has been Nippon Steel of Tokyo, Japan which produced 29.65 million tons 30,12 million tonnes of steel and steel products in 1981. The Fukuyama Works of Nippon Kokan has a capacity of more than 16 000 000 tonnes/tons per annum. Its work force is 76,000.

STOCK EXCHANGES

The oldest Stock Exchange of the 138 listed throughout the world is that of Amsterdam, in the Netherlands, founded in 1602.

Most markings

The highest number of markings received in one day on the London Stock Exchange was 32,665 on 14 Oct 1959 following the 1959 General Election. The record for a year is 4,396,175 'marks' in the year ending 31 Mar 1960. There were 7213 securities (cf. 9749 peak in June 1973) listed at 31 Dec 1981. Their total nominal value was £159,106 million (gilt-edged £88,909 million) and their market value was £422,059 million (gilt-edged £71,518 million).

The highest figure of *The Financial Times* Industrial Ordinary share index (1 July 1935 = 100) was 597.3 on 30 Apr 1981. The lowest figure was 49.4 on 26 June 1940. The greatest rise in a day has been 23.7 points to 315.5 on 1 July 1975 in anticipation of anti-inflationary measures, and the greatest fall in a day was 24.0 to 313.8 on 1 Mar 1974 on the realization of a fourth post-war Labour Government.

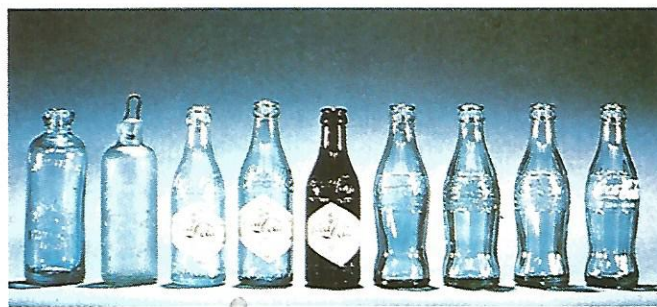
Highest par value

The highest denomination of any share quoted in the world is a single share in F. Hoffmann-La Roche of Basel worth Sw. Fr 101 000 (£21,992) on 23 Apr 1976. The record for the London Stock Exchange is £100 for preference shares in Baring Brothers & Co Ltd, the bankers.

U.S. records

The highest index figure on the Dow Jones average (instituted 8 Oct 1896) of selected industrial stocks at the close of a day's trading was 1051.70 on 11 Jan 1973, when the average of the daily 'highs' of the 30 component stocks was 1067.20. The record day's trading was 92,881,420 shares on 7 Jan 1981. The old, record trading volume in a day on the New York Stock Exchange of 16,410,030 shares on 29 Oct 1929, the 'Black Tuesday' of the famous 'crash' was unsurpassed until April 1968. The Dow Jones industrial average, which reached 381.71 on 3 Sept 1929, plunged 30.57 points on 29 Oct 1929, on its way to the Depression's lowest point of 41.22 on 8 July 1932. The largest decline in a day, 38.33 points, occurred on 28 Oct 1929. The total lost in security values from 1 Sept 1929 to 30 June 1932 was \$74,000 million (then £23,000 million). The greatest paper loss in a year was \$209,957 million (then £87,500 million) in 1974. The record daily increase of 28.40 on 30 Oct 1929 was most recently bettered on 1 Nov 1978 with 35.34 points to 827.79. The largest transaction on record 'share-wise' was on 14 Mar 1972 for 5,245,000 shares of American Motors at \$7.25 each. The largest

below: The evolution of the world's most familiar bottle—the Coca-Cola bottle from the originals of 1915 to the present day (see pp. 163-4).



stock trade in the history of the New York Exchange was a 1,874,300 share block of Cutler-Hammer stock at \$55 in a \$103,086,500 (£54½ million) transaction on 12 June 1978. The highest price paid for a seat on the NY Stock Exchange was \$515,000 (then £214,580) in 1969. The lowest 20th century price was \$17,000 in 1942. The value of stocks listed on the New York Stock Exchange reached an all-time high on 30 Nov 1980.

Largest and smallest equity

The greatest aggregate market value of any corporation at year end was \$48.0 billion (then £26,600 million) at a closing price of \$58⅞ multiplied by the 815,107,000 shares of AT & T extant on 31 Dec 1981.

Britain's smallest public listed company is Dura Mill Ltd of Whitworth, Lancashire, producers of very high quality yarn with a capitalization of £85,000 in 30 p shares.

Greatest personal loss

The highest recorded personal paper losses on stock values have been those of Ray A. Kroc, Chairman of McDonald's Corporation with \$64,901,718 (then £27 million) on 8 July 1974 and Edwin H. Land, President of Polaroid Corporation with \$59,397,355 on 28-29 May 1974, when Polaroid stock closed \$12.12 down at 43¼ on the day.

Largest new issue

The American Telegraph & Telephone Company offered \$1375 million's worth of shares in a rights offer on 27,500,000 shares of convertible preferred stock on the New York market on 2 June 1971. The largest offering on the London Stock Exchange by a United Kingdom company was the £624 million rights offer of British Petroleum Co plc on 23 June 1981.

Largest investment house

The largest investment company in the USA, and once the world's largest partnership with 124 partners, before becoming a corporation in 1959, is Merrill, Lynch, Pierce, Fenner & Smith Inc (founded 6 Jan 1914) of New York City, USA. Its parent, Merrill, Lynch and Co, has assets of \$17 billion, 35,000 employees, 540 offices and 3 million separate accounts. The firm is referred to in the United States stock exchange circles as 'The Thundering Herd' or a 'Breed Apart'.

Largest store

The world's largest store is R. H. Macy & Co Inc at Broadway and 34th Street, New York City, NY, USA. It covers 50.5 acres 20,3 ha and employs 12,000 who handle 400,000 items. The sales of the company and its subsidiaries in 1981 were \$2,656,689,000 (£1476 million). Mr Rowland Hussey Macy's sales on his first day at his fancy goods store on 6th Avenue, on 27 Oct 1858, were recorded as \$11.06 (then £2.20).

Sugar Mill

The highest recorded output for any sugar mill was set in 1966-67 by Ingenio de San Cristobal y Anexas, S.A., Veracruz, Mexico with 247,900 tonnes refined from 2,886,074 tonnes of cane ground.

Largest supermarket

The largest supermarket in the United Kingdom is Carrefour in Bristol. Currently it has a selling area of 90,000 ft² 8360 m² and parking space for 1700 cars. The turnover exceeds £1 million per week. Self-service single level stores with a gross area of more than 50,000 ft² 5000 m² are commonly referred to as hypermarkets.

Tobacco company

Subsidiary and affiliates of B.A.T. Industries (founded in London in 1902 as British-American Tobacco Co.) comprise the world's largest tobacco concern. They operate 120 tobacco factories in 52 countries: consolidated turnover in 1981 was £9265 million and total assets were £4988 million at 31 Dec 1981. The Group's sales in 1980 topped 560,000 million cigarettes.

The world's largest cigarette plant is the \$300 million Philip Morris plant at Richmond, Virginia, USA opened in October 1974. Employing 5500 people the facility produces more than 530 million cigarettes a day.

Toy manufacturer

The world's largest single manufacturer of toys is Mattel Inc of Hawthorne, Los Angeles, USA founded in 1945. Its total sales for the year ending 30 Jan 1981 were \$1,134,252,000 (£630.1 million) for 3 divisions of which Mattel Toys is the largest.

Toy shop

The world's biggest toy shop is Hamleys of Regent Street Ltd, founded in 1760 in Holborn and removed to Regent Street, London, W1 in 1901. It has selling space of 45,000 ft² 4180 m² on 6 floors with over 300 employees during the Christmas season. It was taken over by Debenhams on 12 May 1976.

Undertaker (or Mortician)

The world's largest undertaking business is the SCI (Service Corporation International) with 289 funeral homes and 51 cemeteries with associated limousine fleets and flower shops. Their annual revenue in the most recession-proof of industries in 1981 was \$180 million (£100 million).

Vintners

The oldest champagne firm is Ruinart Père et Fils founded in 1729. The oldest cognac firm is Augier Frères & Co, established in 1643.

2. MANUFACTURED ARTICLES

Guinness Superlatives Ltd has published specialist volumes entitled *English Pottery and Porcelain* (price £7.95), *Antique Firearms* (price £7.95) and the *Guinness Book of Antiques* by John Fitzmaurice Mills (price £7.95).

Antique Largest

The largest antique ever sold has been London Bridge in March 1968. The sale was made by Mr Ivan F. Luckin of the Court of Common Council of the Corporation of London to the McCulloch Oil Corporation of Los Angeles, California, USA for \$2,460,000 (then £1,029,000). The 10,000 tons/tonnes of façade stonework were re-assembled at a cost of £3 million, at Lake Havasu City, Arizona and 're-dedicated' on 10 Oct 1971.

Armour Most Expensive

The highest auction price paid for a suit of armour is £418,000 paid on 18 Nov 1981 for the suit ordered by Henry, Prince of Wales, made at Greenwich in 1610-13 by William Pickering for Frederic Ulric, Duke of Brunswick.

Heaviest

The armour of William Somerset, 3rd Earl of Worcester made at the Royal Workshop, Greenwich c. 1570 weighed 81 lb 9 oz 37,0 kg. If his five bullet-proof exchange elements were substituted the total weight reaches 133 lb 13 oz 60,7 kg.

Art Nouveau

The highest auction price for any piece of art nouveau is \$360,000 (then £163,600) for a spider-web leaded glass mosaic and bronze table lamp by L. C. Tiffany at Christie's, New York on 8 Apr. 1980.

Beds Largest

In Bruges, Belgium, Philip, Duke of Burgundy had a bed 12½ ft wide and 19 ft long 3,81 × 5,79 m erected for the perfunctory *coucher officiel* ceremony with Princess Isabella of Portugal in 1430. The largest bed in Great Britain is the Great Bed of Ware, dating from c. 1580, from the Crown Inn, Ware, Hertfordshire, now preserved in the Victoria and Albert Museum, London. It is 10 ft 8½ in wide, 11 ft 1 in long and 8 ft 9 in tall 3,26 × 3,37 × 2,66 m. The largest bed currently marketed in the United Kingdom is a Super Size Diplomat bed, 9 ft wide by 9 ft long, 2,74 m² from The London Bedding Centre, Sloane Street, SW1 which would cost more than £4000.

Heaviest

The heaviest bed is a water bed 9 ft 7 in × 9 ft 10 in 2,92 × 2,99 m owned by Milan Vacek of Canyon Country, California since 1977. The thermostatically heated water alone weighs 4205 lb 1907 kg.

Beer cans

Beer cans date from a test marketing by Krueger Beer of Newark, New Jersey at Richmond, Virginia in 1935. The largest collection is claimed by John F. Ahrens of Mount Laurel, New Jersey with 13,000 different cans. A Rosalie Pilsner can sold for \$6000 (then £2700) in the US in April 1981.

Beer mat collections (Tegestology)

The world's largest collection of beer mats is owned by Leo Pisker of Vienna, who had collected nearly 89,000 different mats from 147 countries by April 1982. The largest collection of purely British mats is 25,104 by Charles M. Schofield of Glasgow by April 1982.

Blanket

The largest blanket ever made measured 68 x 100 ft 20,7 x 30,48 m weighing 600 lb 272 kg. It was knitted in 20,160 squares in 10 months (October 1977-July 1978) by *Woman's Weekly* readers for Action Research for The Crippled Child. It was shown on BBC TV *Record Breakers* in October 1978. The most expensive blanket was a Navajo bayeta serape sold for \$59,400 (£33,000) at Sotheby's in May 1981.

Candle

A candle 80 ft 24,38 m high and 8½ ft 2,59 m in diameter was exhibited at the 1897 Stockholm Exhibition by the firm of Lindahls. The overall height was 127 ft 38,70 m.

Carpets and rugs Earliest

The earliest carpet known is a woollen pile-knotted carpet, red on white ground excavated at Pazyryk, USSR in 1947, dated to the 5th century BC and now preserved in Leningrad.

Largest

Of ancient carpets the largest on record was the gold-enriched silk carpet of Hashim (dated AD 743) of the Abbasid caliphate in Baghdad, Iraq. It is reputed to have measured 180 by 300 ft 54,86 x 91,44 m. A 54,000 ft² 5016 m² or 1.23 acre 28 ton red carpet was laid on 13 Feb 1982 by the Allied Corporation from Radio City Music Hall to the New York Hilton along the Avenue of the Americas.

Most expensive

The most magnificent carpet ever made was the Spring carpet of Khusraw made for the audience hall of the Sassanian palace at Ctesiphon, Iraq. It was about 7000 ft² 650 m² of silk, gold thread and encrusted with emeralds. It was cut up as booty by military looters in AD 635 and from the known realization value of the pieces must have had an original value of some £100,000,000. In 1946 the Metropolitan Museum, New York, privately paid \$1 million (then £248,138) for the 26.5 x 13.6 ft 807 x 414 cm Anhalt Medallion carpet made in Tabriz or Kashan, Persia c. 1590. The highest price ever paid at auction for a carpet is £121,000 for a Mamluk carpet 12 ft 5 in x 7 ft 3 in 378 x 220 cm presumed woven in Cairo c. 1500, at Sotheby's Bond Street Salerooms, London on 29 Mar 1978.

Most finely woven

The most finely woven carpet known is one with more than 2490 knots per in² 38,6 per cm² from a fragment of an Imperial Mughal prayer carpet of the 17th century now in the Altman collections in the Metropolitan Museum of Art, New York City, NY, USA.

Ceramics

The auction record for any ceramic object is £420,000 for the 16½ in 41,2 cm Ming blue and white bottle dated 1403-24 acquired by Mrs Helen Glatz, a London dealer, at Sotheby Parke Bernet, London on 2 Apr 1974. The Greek urn painted by Ueuphromios and thrown by Euxitheos in c. 530 BC was bought by private treaty by the Metropolitan Museum of Art, New York for \$1.3 million (then £541,666) in August 1972.

Chair Largest

The world's largest chair is the 2000 lb 907 kg 33 ft 1 in 10,08 m tall, 19 ft 7 in 5,96 m wide chair constructed by Anniston Steel & Plumbing Co. Inc for Miller Office Furniture in Anniston, Alabama, USA and completed in May 1981.

Most expensive

The highest price ever paid for a single chair is \$85,000 (then £35,000) for the John Brown Chippendale mahogany corner chair attributed to John Goddard of Newport, Rhode Island,

USA and made in c. 1760. This piece was included in the collection of Mr Lansdell K. Christie dispersed by Sotheby Parke Bernet, New York on 21 Oct 1972.

Chandelier Largest

The world's largest chandelier was built in Murano, Italy in 1953 for the Casino Knokke, Belgium. It measures 8 m 26 ft 3 in in circumference and 7 m 23 ft in height and weighs 37 tons/tonnes with 1896 electric lights. Britain's largest is in the Chinese Room at the Pavilion, Brighton.

Christmas cracker

The largest functional cracker ever constructed was one 56 ft 7 in 17,24 m in length and 9½ ft 2,9 m in diameter built for British Rail Hull Paragon Station and pulled on 21 Nov 1980.

Cigars Largest

The largest smokeable cigar ever made measures 12½ ft 3,81 m taking 315 man hours and using 1503 full tobacco leaves. It was made by the Garcia brothers now of Las Palmas, Canary Islands, formerly of Cuba, in 1981.

The largest marketed cigar in the world is the 14 in 35,5 cm Valdez Emperado by San Andres Cigars. Joseph Hruby of Lyndhurst, Ohio has the largest known collection of cigar bands with 165,480 different examples dating from c. 1895.

Most expensive

The most expensive standard cigar in the world is the Montecristo 'A', which retails in Britain at £9.75.

Most voracious smokers

Jim Purol and Mike Papa each smoked 135 cigarettes simultaneously for 5 min on 5 Oct 1978 at Rameys Lounge, Detroit, Michigan, USA. On 3 Sept 1979 at the same venue, they each smoked 27 cigars simultaneously for 5 min.

Cigarettes Consumption

The heaviest smokers in the world are the people of the United States, where 665,000 million cigarettes (an average of 3900 per adult) were consumed at a cost of some \$15,000 million (£7,900 million) in 1977. The people of China however were estimated to consume 725,000 million in 1977. The peak consumption in the United Kingdom was 3230 cigarettes per adult in 1973. The peak volume was 243,100,000 lb 110,2 million kg in 1961, compared with 218,000,000 lb 98,9 million kg in 1978 when 125,200 million cigarettes were sold.

In the United Kingdom 59 per cent of adult men and 42 per cent of adult women smoke despite its description as the largest cause of premature death, illness or disability.

Tar/Nicotine content

Of the 135 brands most recently analysed for the Dept of Health and Social Security, the one with highest tar/nicotine content is *Capstan Full Strength* with 26/2.7 mg per cigarette. *Silk Cut King Size Ultra Low*, *Embassy Ultra Mild King Size* and *John Player King Size Ultra Mild* with < 4/0.3 are at the lower risk end of the league table.

Most popular

The world's most popular cigarette is 'Marlboro', a filter cigarette made by Phillip Morris, which sold 234,460 million units in 1981. The largest selling British cigarette in 1979 was *Benson and Hedges King Size*. The Wills brand 'The Three Castles' was introduced in 1878.

Longest and shortest

The longest cigarettes ever marketed were 'Head Plays', each 11 in 27,9 cm long and sold in packets of 5 in the United States in about 1930, to save tax. The shortest were 'Lilliput' cigarettes, each 1¼ in 31,7 mm long, and ⅛ in 3 mm in diameter, made in Great Britain in 1956.

Largest collection

The world's largest collection of cigarettes is that of Robert E. Kaufman, MD, of 950 Park Avenue, New York City 10028, NY, USA. In April 1982 he had 7580 different cigarettes with 43 kinds of tips made in 172 countries. The oldest brand represent-

ed is 'Lone Jack', made in the USA in c. 1885. Both the longest and shortest (see above) are represented.

Cigarette cards

The earliest known tobacco card is 'Vanity Fair' dated 1876 issued by Wm S. Kimball & Co., Rochester, New York. The earliest British example appeared c. 1883 in the form of a calendar issued by Allen & Ginter, of Richmond, Virginia, trading from Holborn Viaduct, City of London. The largest known collection is that of Mr Edward Wharton-Tigar, MBE (b. 1913) of London with a collection of more than 1,000,000 cigarette and trade cards in about 45,000 sets. The most valuable card is one of the 6 known baseball series cards of Honus Wagner, who was a non-smoker, valued in 1981 at \$12,000 (£6650).

Cigarette lighter *Most expensive*

The most expensive cigarette pocket lighter in the world is the 18 carat white gold Dunhill Gemline lighter set with a 2.57 ct VSG colour emerald-cut diamond, with an additional 8.37 ct worth of brilliant-cut diamonds of VSH colour, and selling for £32,500 at Dunhill's in St. James's, London in 1981.

Cigarette packets

The earliest surviving cigarette packet is the Finnish 'Petit Canon' packet for 25, made by Tollander & Klärlich in 1860, from the Ventegodt Collection. The rarest is the Latvian 700-year anniversary (1201-1901) Riga packet, believed to be unique, from the same collection. The largest verified private collection is one of 60,955 from over 150 countries owned by Vernon Young of Farnham, England.

Credit card collection

The largest collection of valid credit cards at 1 May 1982 is one of 1122 (all different) by Walter Cavanagh (b. 1943) of Santa Clara, California, USA. The cost of acquisition to 'Mr. Plastic Fantastick' was nil, and he keeps them in the world's longest wallet—250 ft 76.2 m long weighing 35 lb 15.87 kg worth more than \$1.25 million in credit.

Curtain

The largest curtain ever built has been the bright orange-red 4 ton 4064 kg 185 ft 56 m high curtain suspended 1350 ft 411 m across the Rifle Gap, Grand Hogback, Colorado, USA by the Bulgarian-born sculptor Christo, 46 (né Javacheff) on 10 Aug 1971. It blew apart in a 50 mph 80 km/h gust 27 hr later. The total cost involved in displaying this work of art was \$750,000 (then £312,500).

The world's largest functional curtain is one 550 ft long × 65 ft high 167.6 × 19.8 m in the Brabazon Hanger at British Aerospace Filton, Bristol used to enclose aircraft in the paint spraying bay. It is electrically drawn.

Dolls

The highest price paid at auction for dolls is £16,000 for a pair of William and Mary painted wooden dolls in original clothes, 22 in 55.8 cm high at Sotheby's, London on 19 Apr 1974. After an export licence was refused they were purchased, following a public subscription, by the Victoria and Albert Museum, London. A rag doll 27 ft 8.2 m in height was made at Macy's, New York City, USA on 26 Aug 1979.

Dress *Most expensive*

The dress with the highest price tag ever exhibited by a Paris fashion house was one in the Schiaparelli spring/summer collection on 23 Jan 1977. 'The Birth of Venus' designed by Serge Lepage with 512 diamonds was priced at Fr. 7,500,000 (£880,000).

Emperor Field Marshal Jean-Bédél Bokassa's coronation robe with a 39 ft 11.8 m long train was encrusted with 785,000 pearls and 1,220,000 crystal beads by Guiselin of Paris for £77,125 for use at Bangui, Central African Empire on 4 Dec 1977.

Fabrics *Earliest and Most expensive*

The oldest surviving fabric discovered from Level VI A at Çatal Hüyük, Turkey has been radio-carbon dated to 5900 BC.

The most expensive fabric obtainable is an evening-wear fabric 37½ in 95 cm wide, hand embroidered, sequinned and pearl-beaded in a series of designs on pure silk grounds. One design has as many as 25,000 sequins and pearls per sq metre 29,900 per sq yard and is designed by Alan Hershman of Duke St, London; it cost £290 per metre in April 1982.

Finest cloth

The most expensive cloth, the brown-grey throat hair of Indian goats, is Shatoosh (or Shatusa), finer, and more expensive than Vicuña. It is sold by Neiman-Marcus of Dallas, Texas, USA, at \$1000 (£555) per yard but supplies have now dried up.

Firework

The largest firework ever produced was *Fat Man II* by the New York Pyrotechnic Products Inc fired near Titusville, Florida on 22 Oct 1977. The 720 lb 326.5 kg shell was 40½ in 102.8 cm in diameter. The largest firework produced in Britain is one fired on 8 June 1946 from Brock's 25 in 635 mm, 22 cwt 1117 kg mortar. The shell weighs 200 lb 90.7 kg and is 6½ ft 1.98 m in circumference and was first used in Lisbon in 1886.

Flags *Oldest*

The oldest known flag is one dating to c. 500 BC found in the excavation of the princesses graves in Hunan, Changsha, China. The Friesian flag still flown in the Netherlands dates from the 9th century AD.

Largest

The largest flag in the world, the 'Stars and Stripes', was displayed at Evansville, Indiana on 22 Mar 1980 measuring 411 ft 125 m by 210 ft 64 m with a weight of 7 tons/tonnes in readiness for its hoisting on the Verrazano Narrows Bridge, New York, USA on 4 July 1981. It is the brainchild of advertising man Len Silverfine. The largest Union Flag (or Union Jack) was one 240 × 108 ft 73.15 × 32.91 m displayed at the Royal Tournament, Earl's Court, London in July 1976. It weighed more than a ton and was made by Form 4Y at Bradley Rowe School, Exeter, Devon. The largest flag flown from a public building in Britain is a Union Flag measuring 40 ft 12.19 m by 20 ft 6.09 m first flown from the Civic Offices, Newcastle-under-Lyme, Staffordshire on 21 Apr 1977. The study of flags is known as vexillology.

Float

The largest float is the 150 ft 45.7 m long, 22 ft 6.7 m wide 'Agree' Float bearing 51 All-American Homecoming 'Queens' used at the Orange Bowl parade, Miami, Florida on 29 Dec 1977.

Furniture *Most expensive*

The highest price ever paid for a single piece of furniture is 7,600,000 francs (then £844,440) by the J. Paul Getty Museum in Malibu, California, for a 10 ft 3.048 m high marquetry and ormolu Louis XV corner cabinet made by Dubois, at Sotheby, Parke Bernet, Monte Carlo on 25 June 1979.

The English furniture record was set by a black-japanned bureau-bookcase of c. 1705. Formerly owned by Queen Mary, it made \$860,000 (then £463,366) at Sotheby, New York on 18 Oct 1981.

Oldest British

The oldest surviving piece of British furniture is a three-footed tub with metal bands found at Glastonbury, Somerset, and dating from between 300 and 150 BC.

Largest Piece

The largest item of furniture in the world is the wooden bench in Green Park, Obihiro, Hokkaido, Japan which seats 1282 people and measures 400 m 1312 ft 4 in long. It was completed by a team of 770 on 19 July 1981.

Glass

The most priceless example of the art of glass-making is usually regarded as the glass Portland Vase which dates from late in the 1st century BC or 1st century AD. It was made in Italy, and was in the possession of the Barberini family in Rome from at least 1642. It was eventually bought by the Duchess of Portland in 1792 but smashed while in the British Museum in 1847. The

auction record is £520,000 for a Roman glass cage-cup of c. AD 300 measuring 7 in 17.78 cm in diameter and 4 in 10.16 cm in height, sold at Sotheby's, London, on 4 June 1979 to Robin Symes. The thinnest glass made is 0.3 mm $\frac{1}{8}$ sth of an inch thick for digital displays by Nippon glass Corp.

Gold plate

The world's highest auction price for a single piece of gold plate is £66,000 (then \$122,000) for an English George III salver, known as 'The Rutland Salver', made by Paul Storr of London, 1801. The salver, which is 12 in 30.5 cm in diameter, is engraved with the arms of Manners, Dukes of Rutland and of the 16 towns and cities, the gold Freedom boxes of which were melted down to make the salver. It was sold by Sotheby Parke Bernet, London, on May 4 1978.

The gold coffin of the 14th century BC Pharaoh Tutankhamun discovered by Howard Carter on 16 Feb 1923 in Luxor, western Thebes, Egypt weighed 110.4 kg 243 lb. The exhibition at the British Museum attracted 1,656,151 people (of whom 45.7 per cent bought catalogues) from 30 Mar to 30 Dec 1972, resulting in a profit of £657,731.22.

Guns

The highest price ever paid for a single gun is £125,000 given by the London dealers F. Partridge for a French flintlock fowling piece made for Louis XIII, King of France in c. 1615 and attributed to Pierre le Bourgeois of Lisieux, France (d. 1627). This piece was included in the collection of the late William Goodwin Renwick of the United States sold by Sotheby's, London on 21 Nov 1972 (see also Pistols). It is now in the Metropolitan Museum, New York, USA.

Hat Most expensive

The highest price ever paid for a hat is 165,570 francs (then £14,032) (incl. tax), by Moët et Chandon at an auction by Maitres Liery, Rheims et Laurin on 23 Apr 1970 for one last worn by Emperor Napoleon I (1769-1821) on 1 Jan 1815.

Icon Most expensive

The record auction price for an icon is \$150,000 (then £67,500) paid at Christie's, New York on 17 Apr 1980 for the *Last Judgement* (from the George R. Hann collection, Pittsburgh, USA) made in Novgorod in the 16th century.

Jade

The highest price ever paid for an item in jade is 1,250,000 Swiss Francs (then £156,250) for a necklace set with 31 graduated beads of Imperial green jade. This was sold by Christie's at the Hotel Richmond, Geneva, Switzerland, on 9 May 1973. The highest price paid for jade objects is HK\$1.4 million (£175,000) for a pair of 19th-century green jadeite table screens 17¼ in 43.8 cm in height sold by Sotheby's in Hong Kong on 2 Nov 1976.

Jewels

The highest auction price for any jewels (or any work of art) is £2,825,000 (or £3.1 million with the buyer's premium) for two pear-shaped diamond drop earrings of 58.6 and 61 carats at Sotheby's, Geneva on 14 Nov 1980. Neither the buyer nor seller was disclosed.

Jig-saw Earliest and largest

The earliest jig-saws were made as 'dissected maps' by John Spilsbury (1739-69) in Russell Court off Drury Lane, London c. 1762. The largest jig-saw ever made is one 50 ft 9¾ in × 50 ft 5¾ in 15.48 × 15.38 m with 10,201 pieces by Richard & Roger Meade unveiled at East Wilkes High School, North Carolina, USA on 26 July 1980. Gimbels of New York City sold in 1933 a Ringling Barnum Circus Puzzle 8½ × 13 ft 2.59 × 3.96 m weighing 597 lb 270 kg with 50,000 pieces made by Eureka Jig Saw Puzzle Co. of Philadelphia.

Matchbox labels

The oldest match label of accepted provenance is that of Samuel Jones c. 1830. The finest collection of trade mark labels (excluding any bar or other advertising labels) is some 280,000 pieces collected by the philhellinist Robert Jones of Indianapolis, USA. The greatest British prize is a Lucifer & Congreve label of c. 1835.

Nylon Sheerest

The lowest denier nylon yarn ever produced is the 6-denier used for stockings exhibited at the Nylon Fair in London in February 1956. The sheerest stockings normally available are 9-denier. An indication of the thinness is that a hair from the average human head is about 50 denier.

Paperweight

The highest price ever paid for a glass paperweight is £48,000 at Christie's, London on 10 July 1979 for a St Louis 19th century paperweight.

Penknife

The penknife with the greatest number of blades is the Year Knife made by the cutlers, Joseph Rodgers & Sons Ltd, of Sheffield, England, whose trade mark was granted in 1682. The knife was built in 1822 with 1822 blades but had to halt at 1973 because there was no further space. It was acquired by Britain's largest hand tool manufacturers, Stanley Works (Great Britain Ltd of Sheffield, South Yorkshire in 1970).

Pens Most expensive

The most expensive writing pens are the 18 carat pair of pens (one fibre-tipped and one ballpoint) capped by diamonds of 3.88 carats sold by Alfred Dunhill (see Cigarette lighter) for £994 the pair (incl. VAT).

Pipe Most expensive

A very large meerschaum pipe with a bowl fashioned into a portrayal of Anthony and Cleopatra has been priced at \$15,000 by Racine and Laramie of San Diego, California in Feb 1982.

Pistols Most expensive

The highest price paid for a pair of pistols at auction is the £78,000 given by the London dealer Howard Ricketts at Sotheby Parke Bernet, London on 17 Dec 1974 for a pair of English Royal flintlock holster pistols made c. 1690-1700 by Pierre Monlong. They were sent for sale by Anne, Duchess of Westminster.

The highest price paid at auction for a pistol is £110,000 at Christie's London on 8 July 1980 for a Sadeler wheel-lock holster pistol from Munich dated c. 1600.

Playing cards

The rarest pack of playing cards is the 17th century 'Lives of the Saints' published by the Bowles family and estimated to be worth £2000. A 7 of diamonds signed by Edward Gibbon in 1786 as an IOU for £320 has been sold for £500.

Porcelain and pottery

The highest auction price for any ceramic or any Chinese work of art is £720,000 for a blue and white Ming vase of 1426-35 bought by Hirano of Japan at Sotheby's, London on 15 Dec 1981.

Post cards

Deltiology is claimed to be the third largest collecting hobby next only to stamps and coins. Austria issued the first cards in 1869 followed by Britain in 1872. Values tend to be obscured by the philatelic element.

Pot lid

The highest price paid for a pot lid is £3300 for a seaweed-patterned 'Spanish Lady' lid sold at Phillips, London on 19 May 1982.

Ropes largest and longest

The largest rope ever made was a coir fibre launching rope with a circumference of 47 in 119 cm made in 1858 for the British liner *Great Eastern* by John and Edwin Wright of Birmingham. It consisted of four strands, each of 3780 yarns. The longest fibre rope ever made without a splice was one of 10,000 fathoms or 11.36 miles 18288 m of 6½ in 16.5 cm circumference manila by Frost Brothers (now British Ropes Ltd) in London in 1874.

Shoes

James Smith, founder of James Southall & Co of Norwich,

England introduced sized shoes in 1792. The firm began making 'Start-rite' children's shoes in 1923.

The most expensive standard shoes obtainable are mink-lined golf shoes with 18 carat gold embellishments and ruby-tipped spikes made by Stylo Matchmakers International Ltd, of Northampton, England which retail for £5180, or \$9320 per pair in the USA.

Largest

Excluding cases of elephantiasis, the largest shoes ever sold are a pair size 42 built for the giant Harley Davidson of Avon Park, Florida, USA. The normal limit is size 14. The 1887 Jubilee Boot made for the Newark trades procession, Nottinghamshire weighed 81¾ lb 31.7 kg, is 4 ft 3½ in 131 cm long and is Size 141. It is owned by Clarks Shoe Museum, Street, Somerset.

Silver

The highest price ever paid for silver is £612,500 for the pair of Duke of Kingston tureens made in 1735 by Meissonnier and sold by Christie's, Geneva on 8 Nov 1977.

The largest single pieces of silver are the pair of water jugs of 10,000 troy oz 4.59 cwt 233.2 kg made in 1902 for the Maharaja of Jaipur (1861-1922). They are 5 ft 1.52 m tall and have a capacity of 1800 gallons 8182 litres.

Snuff Most expensive

The most expensive snuff obtainable in Britain is 'Café Royale' sold by G. Smith and Sons (est. 1869) of 74, Charing Cross Road, City of Westminster, Greater London. It sells at £1.82 per oz. as at 1 Mar 1982.

Box

The highest price ever paid for a snuff box is Sw. Fr. 1,540,000 (then £435,028) in a sale at Christie's, Geneva on 11 May 1982 for a gold snuff box dating from 1760-65 and once owned by Frederick the Great of Prussia. It was purchased by S. J. Phillips, the London dealers, for stock.

Sofa Longest

The longest standard sofa manufactured for market is the King Talmage Sofa, 12 ft 2 in 3.7 m in length made by the Talmageville Furniture Manufacturers, California, USA.

Spoons Most expensive

A Diamond Point spoon of late 14th century, found by Malcolm Laws in the thatch of a Devon farmhouse in 1972 was sold at Phillips, London on 22 Jan 1982 for £13,000.

Stuffed bird

The highest price ever paid for a stuffed bird is £9000. This was given on 4 Mar 1971 at Messrs Sotheby & Co., London, by the Iceland Natural History Museum for a specimen of the Great Auk (*Alca impennis*) in summer plumage, which was taken in Iceland c. 1821; this particular specimen stood 22½ in 57 cm high. The Great Auk was a flightless North Atlantic seabird, which was finally exterminated on Eldey, Iceland in 1844, becoming extinct through hunting. The last British sightings were at Co. Waterford in 1834 and St Kilda, Western Isles c. 1840.

Sword

The highest price paid for a sword is the \$145,000 (then £85,800) paid for the gold sword of honour presented by the Continental Congress of 1779 to General Marie Jean Joseph Lafayette at Sotheby Parke Bernet, New York City, USA on 20 Nov 1976.

Table Longest

A buffet table 820.66 m 2692 ft 5 in long with 20,000 dishes was set up by a hotelier in Marienheide, W. Germany to feed 10,000 people attending a charitable fund-raising outdoor event on 22 Apr 1978.

Table cloth

The world's largest table cloth is one 219 yd 200 m long by 2 yd 1.8 m wide double damask made by John S. Brown & Sons Ltd of Belfast and shipped to a royal palace in the Middle East. There was also an order for matching napkins for 450 places.

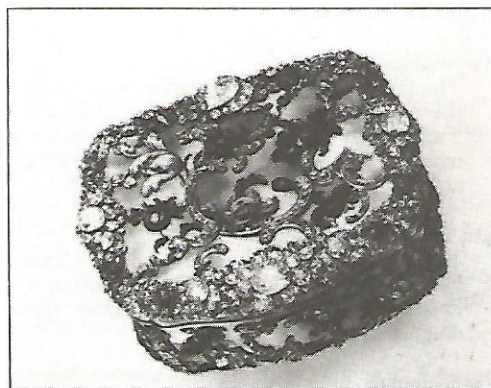
Tapestry Earliest

The earliest known examples of tapestry woven linen are three



above: The 'Spanish Lady' pot lid which sold for a record £3300 on 19 May 1982 (see p. 168). (Phillips)

right: The world's most expensive snuff box dated c. 1760 from the collection of Frederick the Great of Prussia, sold in May 1982 for Sw.F. 1,540,000 (£438,028). (Christies)



pieces from the tomb of Thutmose IV, the Egyptian Pharaoh and dated to 1483-1411 BC.

Largest

The largest single piece of tapestry ever woven is 'Christ in His Majesty', measuring 72 ft by 39 ft 21.94 × 11.88 m designed by Graham Vivian Sutherland OM (1903-80) for an altar hanging in Coventry Cathedral, West Midlands. It cost £10,500, weighs ¾ ton 760 kg and was delivered from Pinton Frères of Fellein, France, on 1 Mar 1962.

Longest embroidery

The famous Bayeux *Telle du Conquest, dite tapisserie de la reine Mathilde*, a hanging 19½ in 49.5 cm wide by 231 ft 70.40 m in length depicts events of the period 1064-6 in 72 scenes and was probably worked in Canterbury, Kent, in c. 1086. It was 'lost' for 2½ centuries from 1476 until 1724. The Overlord Embroidery of 34 panels each 8 × 3 ft 2.43 × 0.91 m, commissioned by Lord Dulverton CBE, TD (b. 1915) from the Royal School of Needlework, London, was completed in 1979 after 100 man years of work and is 41 ft 12.49 m longer than the Bayeux and has the largest area of any embroidery with 816 ft² 75.8 m². An uncompleted 8 in 20.3 cm deep 1230 ft 374.90 m embroidery of scenes from C. S. Lewis's Narnia children's stories has been worked by Mrs Margaret S. Pollard of Truro, Cornwall to the order of Mr Michael Maine.

Most expensive

The highest price paid for a tapestry is £550,000 for a Swiss

Medieval tapestry frieze in two parts dated 1468-1476 at Sotheby's, Geneva, on 10 Apr 1981 by the Basle Historische Museum.

Tartan Earliest

The earliest evidence of tartan is the so-called Falkirk tartan, found stuffed in a jar of coins in Bells Meadow, Falkirk, Scotland. It is of a dark and light brown pattern and dates from c. AD 245. The earliest reference to a specific named tartan has been to a Murray tartan in 1618 although Mackay tartan was probably worn earlier. There are 1300 tartans known to the Museums of Scottish Tartans at Cumrie, Perthshire. HRH Prince of Wales is eligible to wear 11 including the Balmoral which has been exclusive to the Royal Family since 1852.

Tea Towels

The largest reported collection of unduplicated tea towels is 5000 by Mr Tony Judkin of Luton, Bedfordshire.

Thimble Most expensive

The record auction price for a thimble is £8000 paid by the London dealer Winifred Williams at Christie's, London on 3 Dec 1979 for a Meissen dentil-shaped porcelain piece of c. 1740.

Time capsule

The world's largest time capsule is the Tropico Time Tunnel of 10,000 ft³ 283 m³ in a cave in Rosamond, California, sealed by the Kern Antelope Historical Society on 20 Nov 1966 and intended for opening in AD 2866.

Toy Soldier

The auction record for a toy soldier is £260 for a 3 in 7.6 cm British Camel Corps lead soldier of 1910 sold at Phillips of London on 12 Aug 1981.

Typewriters

The first patent for a typewriter was by Henry Mill in 1714 but the earliest known working machine was made by Pellegrine Turri (Italy) in 1808. The highest price paid for an antique machine is £3000 for an 1886 Daw and Tait machine auctioned at Sotheby's, London on 12 Dec 1980.

Vase Largest

The largest vase on record is one 8 ft 2.78 m, in height, weighing 650 lb 294.8 kg, thrown by Sebastiano Maglio at Haeger Potteries of Dundee, Illinois, USA (founded 1872) during August 1976.

Most Valuable

The Chinese ceramic authority Chingwah Lee of San Francisco was reported in Aug 1978 to have appraised a unique 39 in 99 cm Kang Hsi 4-sided vase then in a bank vault in Phoenix, Arizona, at '\$60 million' (now £27.2 million).

Wreath Most expensive

The most expensive wreath on record was that sent to the funeral of President Kennedy in Washington, DC on 25 Nov 1963 by the civic authority of Paris. It was handled by Interflora Inc and cost \$1200 (then £428). The only rival was a floral tribute sent to the Mayor of Moscow in 1970 by Umberto Formichello, general manager of Interflora which is never slow to scent an opportunity.

Writing paper

The most expensive writing paper in the world is that sold by Cartier Inc on Fifth Avenue, New York City at \$10,000 (now £4545) per 100 sheets with envelopes. It is of hand made paper from Tervakoski Osakeyhtiö, Finland, with deckle edges and a 'personalized' portrait watermark. Second thoughts and misspellings tend to be costly.

3. AGRICULTURE

Origins

It has been estimated that only 21 per cent of the world's land surface is cultivable and that only 7.6 per cent is actually under cultivation. Evidence adduced in 1971 from Nok Nok Tha and

Spirit Cave, Thailand tends to confirm plant cultivation and animal domestication was part of the Hoabinhian culture c. 11,000 BC. Reindeer may have been domesticated as early as c. 18,000 BC but definite evidence is still lacking.

Goat was domesticated at Asiab, Iran by c. 8050 BC and dog at Star Carr, North Yorkshire by c. 7700 BC: the earliest definite date for sheep is c. 7200 BC at Argissa-Magula, Thessaly, Greece and for pig and cattle c. 7000 BC at the same site. The earliest date for horse is c. 4350 BC from Dereivka, Ukraine, USSR.

FARMS

Earliest

The earliest dated British farming site is a neolithic one, enclosed within the Iron Age hill-fort at Hembury, Devon, excavated during 1934-5 and now dated to 4210-3990 BC. Pollen analysis from two sites Oakhanger, Hampshire, and Winfrith Heath, Dorset (Mesolithic c. 5000 BC) indicates that Mesolithic man may have had herds which were fed on ivy during the winter months.

Largest World

The largest farms in the world are collective farms (*sovkhozes*) in the USSR. These have been reduced in number from 235,500 in 1940 to only 18,000 in 1980 and have been increased in size so that units of over 60,000 acres 25 000 ha are not uncommon. The pioneer farm of Laucidio Coelho near Campo Grande, Mato Grosso, Brazil in c. 1901 was 3358 miles² 8700 km² 2.15 million acres with 250,000 head of cattle at the time of his death in 1975.

Great Britain

The largest farms in the British Isles are Scottish hill farms in the Grampians. The largest arable farm is that of Elveden, Suffolk, farmed by the Earl of Iveagh. Here 11,246 acres 4551 ha are farmed on an estate of 22,918 acres 9274 ha, the greater part of which was formerly derelict land. The 1981 production included 8852 tonnes 8712 tons of grain and 46 517 tonnes 45,782 tons of sugar beet. The livestock includes 526 beef cattle, 1017 ewes and 4551 pigs.

Most Disrupted

The farm most disrupted by Compulsory Purchase Orders is the 650 acre 263 ha Twelve Oaks Farm, Windlesham, Surrey. Farmer Dudley Glanfield has since 1956 unsuccessfully fought a line of Central Electricity Generating Board giant pylons; Southern Electricity Board high and low voltage lines; 3 North Thames Gas Mains; 2 South Western Suburban Water mains; 3 Esso Petrol lines; a giant sewer pipeline; GPO telephone lines and 1 mile 1.6 km of M3 motorway bisecting the heart of his estate which he has signposted 'Grand Central Station—Every Ruddy Thing Passes Through Here'.

Cattle station

The world's largest cattle station is Strangeray Springs, South Australia extending over 11,594 miles² 7,420,160 acres 3 002 790 ha—more than the area of England's four largest counties of North Yorkshire, Cumbria, Devon and Lincolnshire with Nottinghamshire 'thrown in'. Until 1915 the Victoria River Downs Station, Northern Territory had an area of 22,400,000 acres (35,000 miles² 90 650 km²), the same as England's 20 largest counties put together.

Sheep station

The largest sheep station in the world is Commonwealth Hill, in the north-west of South Australia. It grazes between 70,000 and 90,000 sheep, c. 700 cattle and 54,000 uninvited kangaroos in an area of 4080 miles² 10 567 km², i.e. larger than the combined area of Norfolk and Suffolk.

The largest sheep move on record occurred when 27 horsemen moved a mob of 43,000 sheep 40 miles 64 km from Barcaldine to Beaconsfield Station, Queensland, Australia, in 1886.

Rice Farming

The largest contiguous wild rice (*Zizania aquatica*) farm in the world is Clearwater Rice, Inc at Clearbrook, Minnesota, USA with 2000 acres 809 ha. In 1972 it yielded 262,000 lb 118 87 tonnes.

Turkey farm

The world's largest turkey farm is that of Bernard Matthews plc,

centred at Gt Witchingham, Norfolk, with 1800 workers tending 6,400,000 turkeys.

Chicken ranch

The world's largest chicken ranch is the 345 acre 140 ha 'Egg City' Moorpark, California established by Julius Goldman in 1961. Some 2,220,000 eggs are laid daily by 3.0 million hens.

Piggery

The world's largest piggery is the Sljeme pig unit in Yugoslavia which is able to process 300,000 pigs in a year. Even larger units may exist in Romania but details are at present lacking.

Cow shed

The longest cow shed in Britain is that of the Yorkshire Agricultural Society at Harrogate, North Yorkshire. It is 456 ft 139 m in length with a capacity of 686 cows. The National Agricultural Centre, Kenilworth, Warwickshire, completed in 1967, has, however, capacity for 782 animals.

Foot-and-mouth disease

The worst outbreak of foot-and-mouth disease in Great Britain was that from Salop on 25 Oct 1967 to 25 June 1968 in which there were 2364 outbreaks and 429,632 animals slaughtered at a direct and consequential loss of £150,000,000. The outbreak of 1871, when farms were much smaller, affected 42,531 farms. The disease first appeared in Great Britain at Stratford, East London in August 1839.

Sheep shearing

The highest recorded speed for sheep shearing in a working day was that of John Fagan who machine-sheared 804 lambs (average 89.3 per hour) in 9 hr at Hautora Rd, Pio Pio, New Zealand on 8 Dec 1980. Peter Casserly of Christchurch, New Zealand, achieved a solo blade (i.e. hand-shearing) record of 353 lambs in 9 hours on 13 Feb 1976. In a shearing marathon, four men machine-shore 2519 sheep in 24 hr at Stewarts Trust, Waikia, Southland, New Zealand on 11 Feb 1982.

Mr Lavar Taylor (b. 27 Feb 1896) of Ephraim, Utah claims to have sheared 513,000 sheep to February 1982.

Great Britain

British records for 9 hr have been set at 555 by Roger Poyntz-Roberts (300) and John Savery (255) on 9 June 1971 (sheep caught by shearers), and 610 by the same pair (sheep caught for shearers) in July 1970.

Sheep Survival

On 2 Mar 1978, Peter Boa of Seiberscross, Strath Brora, Sutherland, Scotland dug out 9 sheep buried in snow for 33 days. Two ewes were alive.

Mushroom farm

The largest mushroom farm in the world is the Butler County Mushroom Farm, Inc, founded in 1937 in a disused limestone mine near West Winfield, Pennsylvania, USA. It employs over 1000 in a maze of underground galleries 110 miles 177 km long, producing over 45,000,000 lb 20 411 tonnes of mushrooms per year.

Largest wheat field

The largest single fenced field sown with wheat was one of 35,000 acres 14 160 ha sown in 1951 south west of Lethbridge, Alberta, Canada.

Largest vineyard

The world's largest vineyard is that extending over the Mediterranean façade between the Rhône and the Pyrenees in the départements Hérault, Gard, Aude, and Pyrénées-Orientales in an area of 840 000 ha 2,075,685 acres of which 52.3 per cent is *monoculture viticole*.

Largest hop field

The largest hop field in the world is one of 1836 acres 743 ha near Toppenish, Washington State, USA. It is owned by John I. Haas, Inc, the world's largest hop growers, with hop farms in California, Idaho, Oregon and Washington State, with a total net area of 4112 acres 1664 ha.

Community garden Largest

The largest recorded community garden project is that operated by the City Beautiful Council, and the Benjamin Wegerzyn Garden Center, Dayton, Ohio, USA. It comprises 1173 allotments each of 812¼ ft² 74,45 m².

CROP YIELDS

Wheat

Crop yields for highly tended small areas are of little significance. The British record is 111.4 cwt/acre 13,99 tonnes/ha at 15.5% moisture on a field of 43.24 acres 17,49 ha by Gordon Rennie of Clifton Mains, Newbridge, Lothian, Scotland.

Barley

A yield of 83.2 cwt/acre 10 450 kg/ha of Athene Winter Barley was achieved in 1980 by M. J. Leigh on behalf of R. M. Harris at Watcombe Manor, Watlington, Oxon. from a 30 acre 12,14 ha field.

Corn

A yield of 352.64 US bushels (15½ per cent moisture) from an acre, using De Kalb XL-54, was achieved by Roy Lynn, Jr near Kalamazoo, Michigan on 30 Sept 1977.

Sugar beet

The highest recorded yield for sugar beet is 62.4 short tons (55.71 long tons) per acre 1139,8 tonnes/ha by Andy Christensen and Jon Giannini in the Salinas Valley, California.

Potato picking

The greatest number of US barrels picked in a 9½ hr day is 235 by Walter Sirois (b. 1917) of Caribou, Maine, USA on 30 Sept 1950.

Ploughing

The world championship (instituted 1953) has been staged in 17 countries and won by ploughmen of ten nationalities of which the United Kingdom has been most successful with 7 championships. The only man to take the title three times has been Hugh Barr of Northern Ireland in 1954-5-6.

The fastest recorded time for ploughing an acre 0,404 ha (minimum 32 right-hand turns and depth 9 in 22 cm) is 11 min 33.5 sec by John Binning using a Fiskars 5 furrow 14 in 35,5 cm plough towed by a Same Hercules 160 hp tractor on land belonging to Mr E. W. Morgan & Son of Easton Court Farm, Little Hereford, Shropshire on 24 Sept 1981.

The greatest recorded acreage ploughed in 24 hr is 123.4 acres 49,9 ha by David Griffiths and Pat Neylan using a Lamborghini R-1056 DT tractor with a 6 furrow plough to a depth of 7 in 17,7 cm in the Nakuru District, Kenya on 6-7 July 1978. Frank Allinson of Leyburn, N Yorks, ploughed for 250 hr 9 min 50 sec on 14-24 Nov 1981.

Largest rick

A rick of some 66,000 bales was completed from summer 1977 to September 1978 by Geoffrey Woollard Ltd at Bottisham, Cambridgeshire. It measured 400 × 60 × 18 ft 122 × 18 × 55 m and weighed some 2050 tons 2100 tonnes.

LIVESTOCK

Note: Some exceptionally high livestock auction sales are believed to result from collusion between buyer and seller to raise the ostensible price levels of the breed concerned. Others are marketing and publicity exercises with little relation to true market prices.

Highest Priced Bull

The highest price ever paid for a bull is \$2,500,000 (£1,087,000) for the beefalo (a ¾ bison, ¼ charolais, ¼ Hereford) 'Joe's Pride' sold by D. C. Basolo of Burlingame, California to the Beefalo Cattle Co of Canada, of Calgary, Alberta, Canada on 9 Sept 1974.

The highest price ever paid for a bull in Britain is 60,000 guineas (£63,000), paid on 5 Feb 1963 at Perth, Scotland, by James R. Dick (1928-74) co-manager of Black Watch Farms, for 'Lindertis Evulse', an Aberdeen-Angus owned by Sir Torquill and Lady Munro of Lindertis, Kirriemuir, Tayside, Scotland.

This bull failed a fertility test in August 1963 when 20 months old, thus becoming the world's most expensive piece of beef.

Cow

The highest price ever paid for a cow is \$300,000 (then £136,360) for the Holstein-Friesian 'Pammies Citation Paula' by Dreamstreet Holsteins Inc., Walton, NY, USA at the Hilltop Hanover Farm sale on 21 Nov 1980. The British record is £14,910 for 'Fairthwaite Indiana', a pure-bred Chianina in-calf heifer sold to Mr Christopher Reeves of Taunton, Somerset by Harrison & Hetherington Ltd in Carlisle, Cumbria on 21 Sept 1974.

Sheep

The highest price ever paid for a ram is \$A79,000 (£49,500) by the Gnowangerup Animal Breeding Centre, Western Australia for a Merino ram from the Colinsvale Stud, Mount Bryan, South Australia at the Royal Adelaide Show on 10 Sept 1981.

The British auction record is £21,000 paid by Mr W. Sheddson of Brighthouse, Balmacellan, Kirkcudbright, Dumfries and Gallogway for A. W. Carswell & Son's Blackface ram on 4 Oct 1978.

The highest price ever paid for wool is \$A125.00 per kg greasy (£16.20 per lb) for a bale of extra superfine combing Merino fleece from the Launceston, Tasmania sales on 4 Mar 1982. It was sold by E. J. Dowling & Sons of Ross, Tasmania to Fujii Keori Ltd of Osaka. This Japanese firm has been top bidders ever since 1972.

Pig

The highest price ever paid for a pig is \$42,500 (£21,250) for a Duroc boar named 'Glacier', owned by Baize Durocs of Stamford, Texas, USA, by Wilbert & Myron Meinhardt of Hudson, Iowa, on 24 Feb 1979. The UK record is 3300 guineas (£3465), paid by Malvern Farms for the Swedish Landrace gilt 'Bluegate Ally 33rd' owned by Davidson Trust in a draft sale at Reading, Berkshire on 2 Mar 1955.

Horse

The highest price for a draught horse is \$47,500 (£9,970) paid for the 7-year-old Belgian stallion 'Farceur' by E. G. Good at Cedar Falls, Iowa on 16 Oct 1917.

A Welsh mountain pony stallion 'Coed Cock Bari' was sold to an Australian builder in Wales in September 1978 for 21,000 guineas (then £22,050).

Donkey

Perhaps the lowest ever price for livestock was at a sale at Kuruman, Cape Province, South Africa in 1934 where donkeys were sold for less than 2p each.

Heaviest Cattle

Of heavyweight cattle the heaviest on record was a Holstein-Durham cross named 'Mount Katahdin' exhibited by A. S. Rand of Maine, USA in 1906-10 and frequently weighed at an even 5000 lb 2267 kg. He was 6 ft 2 in at the shoulder with a 13 ft 3.96 m girth and died in a barn fire c. 1923. The British record is the 4480 lb 2032 kg of 'The Bradwell Ox' owned by William Spurgin of Bradwell, Essex. He was 15 ft 4.57 m from nose to tail and had a girth of 11 ft 3.35 m when 6 years old in 1830. The largest breed of heavyweight cattle is the Chianini, brought to Italy from the Middle East in pre-Roman times. Mature bulls average 5 ft 8 in 1.73 m at the forequarters and weigh 2865 lb 1300 kg. In 1955 a bull named 'Donetto' tipped the scales at 3834 lb 1740 kg at the Arezzo show—a world record for any bull of any breed.

The highest recorded birthweight for a calf is 225 lb 102 kg from a British Friesian cow at Rockhouse Farm, Bishopston, Swansea, West Glamorgan, in 1961.

Pig

The heaviest hog recorded was the Poland-China hog 'Big Bill' of 2552 lb 223/4 cwt 11 575 kg measuring 9 ft 2.75 m long with a belly on the ground, owned by Burford Butler of Jackson, Tennessee, USA and chloroformed in 1933. He was mounted and displayed by the Wells family in Jackson, Tennessee until 1946. The British record is a hog of 12 cwt 66 lb 639.5 kg bred by Joseph Lawton of Astbury, Cheshire. In 1774 it stood 4 ft 8 1/2 in

1.43 m in height and was 9 ft 8 in 2.94 m long. The highest recorded weight for a piglet at weaning (8 weeks) is 81 lb 36.7 kg for a boar, one of nine piglets farrowed on 6 July 1962 by the Landrace gilt 'Manorport Ballerina 53rd', alias 'Mary', and sired by a Large White named 'Johnny' at Kettle Lane Farm, West Ashton, Trowbridge, Wiltshire.

Sheep

The highest recorded birthweight for a lamb in the world is 38 lb 17.2 kg at Clearwater, Sedgwick County, Kansas, USA in 1975, but neither this lamb nor the ewe survived.

Broiler growth

The record for growth for flocks of at least 2400 at 56 days is 2,901 kg 6.396 lb with a conversion rate of 2.17 by D. B. Marshall (Newbridge) Ltd of Newbridge, Midlothian, Scotland reported in October 1981.

Prolificacy Cattle

On 25 Apr 1964 it was reported that a cow named 'Lyubik' had given birth to seven calves at Mogilev, USSR. Five live and one dead calf were recorded from a Friesian at Te Puke, North Island, New Zealand on 27 July 1980 but none survived. A case of five live calves at one birth was reported in 1928 by T. G. Yarwood of Manchester. The life-time prolificacy record is 30 in the case of a cross-bred cow owned by G. Page of Warren Farm, Wilmington, East Sussex, which died in November 1957, aged 32. A cross-Hereford calved in 1916 and owned by A. J. Thomas of West Hook Farm, Marloes, Dyfed, Wales, produced her 30th calf in May 1955 and died in May 1956, aged 40.

'Soender Jylland's Jens' a Danish black and white bull left 220,000 surviving progeny by artificial insemination when he was put down aged 11 in Copenhagen in September 1978. 'Bendalls Adema', a Friesian bull, died aged 14 at Clondalkin, County Dublin, Ireland on 8 Nov 1978 having sired an estimated 212,000 progeny by artificial insemination.

Pigs

The highest recorded number of piglets in one litter is 34, thrown on 25-26 June 1961 by a sow owned by Aksel Egedec of Denmark. In February 1955 a Wessex sow owned by Mrs E. C. Goodwin of Paul's Farm, Leigh, near Tonbridge, Kent, had a litter of 34, of which 30 were born dead. The highest reported number of live births in Britain is 30 by W. Ives of Dane End Fruit Farm, near Ware, Hertfordshire from a white Welsh sow in September 1979. A sow, 'Bessie' owned by Mr L. Witt of Bath, Avon farrowed litters of 19 on 12 Nov 1975, 19 (3 still-born) on 5 Apr 1976 and 21 (3 still-born) on 16 Sept 1976 making 59 in a 12 month period (53 reared).

Sheep

A case of eight lambs at a birth was reported by D. T. Jones of Priory Farm, Gwent, in June 1956 and by Ken Towse of Buckton near Bridlington in March 1981 but none lived. A case of a sheep living to 26 years was recorded in flock book records by H. Poole, Wexford, Ireland. Five cases of sextuplet lambs have been reported since 1977.

Egg-laying

The highest authenticated rate of egg-laying is by a white leghorn chicken hen, no. 2988 at the College of Agriculture, University of Missouri, USA, with 371 eggs in 364 days in an official test conducted by Professor Harold V. Biellier ending on 29 Aug 1979. The UK record is 353 eggs in 365 days in a National Laying Test at Milford, Surrey in 1957 by a Rhode Island Red owned by W. Lawson of Welham Grange, Retford, Nottinghamshire.

The heaviest egg reported is one of 16 oz 454 g, with double yolk and double shell, laid by a white Leghorn at Vineland, New Jersey, USA, on 25 Feb 1956. The largest recorded was one of 'nearly 12 oz' for a 5 yolked egg 12 1/4 in 31 cm around the long axis and 9 in 22.8 cm around the shorter axis laid by a Black Minorca at Mr Stafford's Damsteads Farm, Mellor, Lancashire in 1896.

The highest recorded annual average for a flock is 313 eggs in 52 weeks from a flock of 1000 Warren-Stadler SSL layers (from 21 weeks of age) by Eric Savage, White Lane Farm, Albury, Surrey, England in 1974-5.

Agriculture

Most yolks

The highest claim for the number of yolks in a chicken's egg is 9 reported by Mrs Diane Hainsworth of Hainsworth Poultry Farms, Mount Morris, New York, USA in July 1971 and also from a hen in Kirghizia, USSR in August 1977.

Goose egg

The white goose 'Speckle' owned by Donny Brandenburg, of Goshen, Ohio, USA, on 3 May 1977 laid a 24 oz 680 g egg measuring $13\frac{1}{2} \times 9\frac{1}{2}$ in 34×24 cm in circumferences.

Milk yields Cows

The highest recorded world lifetime yield of milk is 403,439 lb (180.10 tons 182 990 kg) by the US Holstein cow 'Breezewood Patsy Bar Pontiac' (b. 11 June 1964) owned by Gelbke Bros. of Vienna, Ohio to 22 June 1981. The greatest yield of any British cow was that given by the British Friesian 'Guillyhill Janna 2nd', owned by S. H. West. This cow yielded 330,939 lb 150 111 kg up to 1973. The greatest recorded yield for one lactation (maximum 365 days) is 55,661 lb 25 247 kg by the Holstein 'Beecher Arlinda Ellen' owned by Mr and Mrs Harold L. Beecher of Rochester, Indiana, USA in 1975. The British lactation record (305 days) was set by 'Queenie', a Friesian-Ayrshire cross, owned by Peter Healey of Street Farm, Eggington, Bedfordshire at 19 195 kg 42,317 lb in 1980-81. The highest reported milk yield in a day is 241 lb 109,3 kg by 'Urbe Blanca' in Cuba on or about 23 Jan 1982.

Hand milking

Andy Faust at Collinsville, Oklahoma, USA in 1937 achieved 120 US gal 99.92 UK gal in 12 hr.

Goats

The highest recorded milk yield for any goat is 7714 lb 3499 kg in 365 days by 'Osory Snow-Goose' owned by Mr and Mrs G. Jameson of Leppington, N.S.W. Australia in 1977. The part Nubian milk goat 'Lou' owned by Mrs Jonnie Stinson of Springtown, Texas was lactating for the 5 years up to her death on 15 Nov 1980.

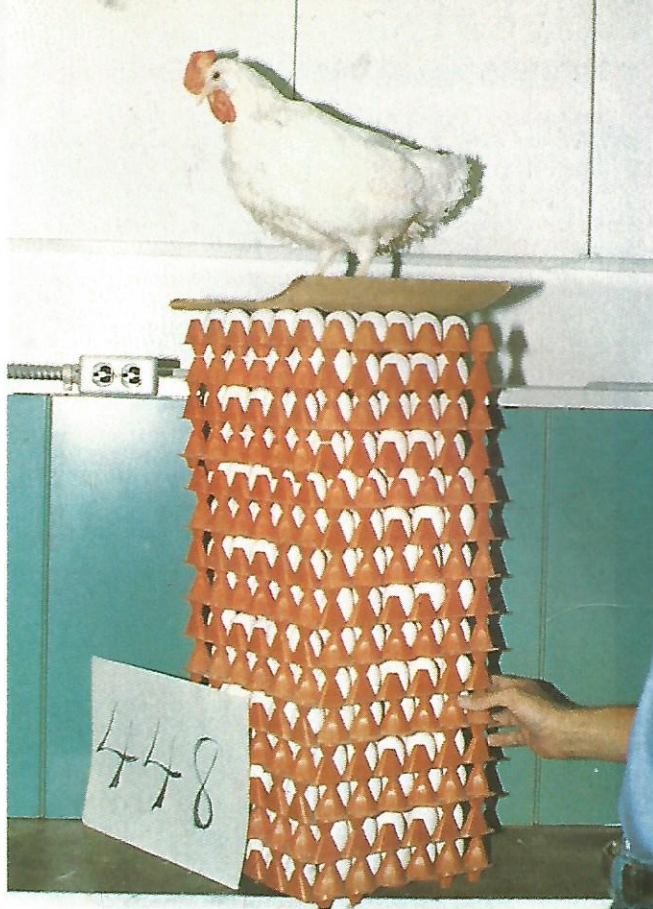
Butter fat yield

The world record lifetime yield is 16,370 lb 7425 kg by the US Holstein 'Breezewood Patsy Bar Pontiac' in 3979 days (see left also for yield record). Her lactation record for 365 days of 2230 lb 1011 kg was reported on 8 Oct 1976. The British record butter fat yield in a lifetime is 12,166 lb 5518 kg by the Ayrshire cow 'Craighead Welma' owned by W. Watson Steele from 273,072 lb at 4.45 per cent. The British record for 365 days is 761 kg 1677.7 lb by 'Crookgate Aylwinia 7' a Friesian, owned by J. V. Machin of Hill Farm, Penley near Wrexham, Clwyd, set on 5 May 1973. The United Kingdom record for butter fat in one day is 9.30 lb 4,218 kg (79 lb 35,8 kg milk at 11.8 per cent) by Queens Letch Farms' Guernsey Cow 'Thisbe's Bronwen of Trewollack'.

Cheese

The most active cheese-eaters are the people of France, with an annual average in 1979 of 17,3 kg 38.1 lb per person. The

Lou, the part Nubian goat from Springtown, Texas who once lactated for more than 5 years.



The white leghorn hen who broke all records when she laid 371 eggs in 364 days (see p. 172). She went on to lay 448 eggs.

world's biggest producer is the United States with a factory production of 4,773,500,000 lbs (2,165,000 tons 2 200 000 tonnes) in 1980. The UK cheese consumption in 1981 was 12.67 lb 5,75 kg per head.

Oldest

The oldest and most primitive cheeses are the Arabian *kishk*, made of dried curd of goats' milk. There are today 450 named cheeses of 18 major varieties, but many are merely named after different towns and differ only in shape or the method of packing. France has 240 varieties.

Most expensive

The world's most expensive cheese is Le Leruns made from Ewes milk at 90 francs per kilo (now £3.40 per lb). Britain's most costly cheese is Blue Wensleydale which has no fixed price but is obtainable from some shops for between £2.50 and £3.00 per lb.

Largest

The largest cheese ever made was a cheddar of 34,591 lb 15 190 kg made in 43 hr on 20-22 Jan 1964 by the Wisconsin Cheese Foundation for exhibition at the New York World's Fair, USA. It was transported in a specially designed refrigerated tractor trailer 'Cheese Mobile' 45 ft 13,71 m long.

CHICKEN PLUCKING

Ernest Hausen (1877-1955) of Fort Atkinson, Wisconsin, USA, died undefeated after 33 years as a champion. On 19 Jan 1939 he was timed at 4.4 sec and reputedly twice did 3.5 sec a few years later.

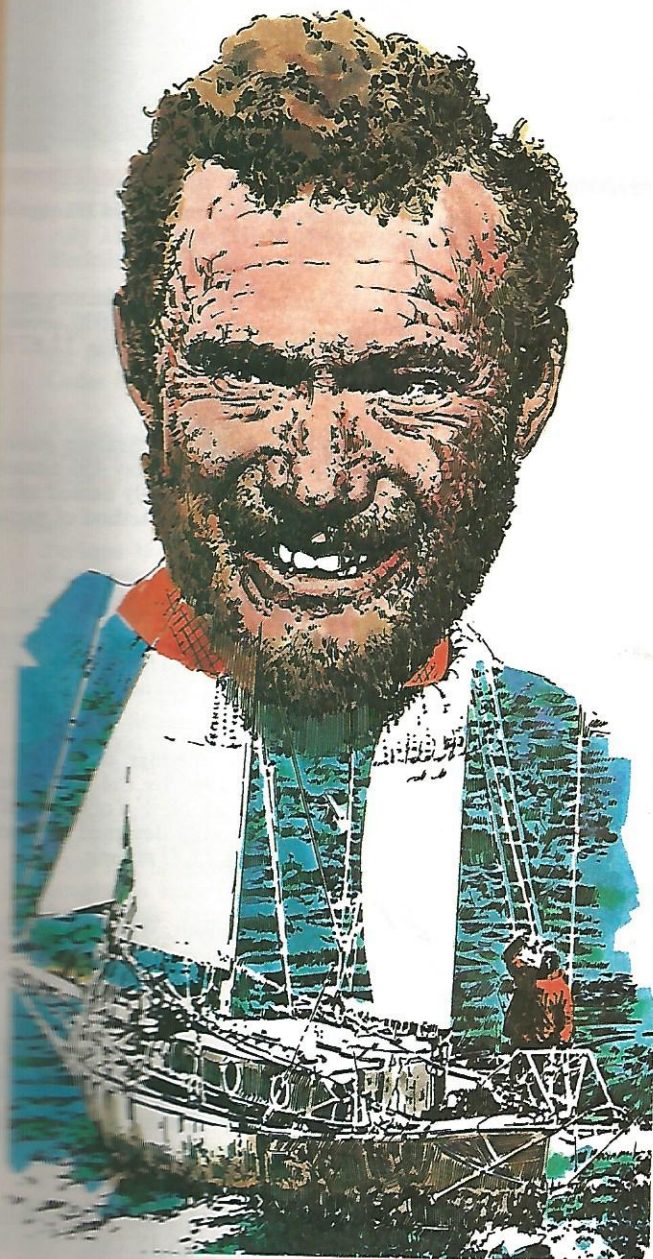
The record time for plucking 12 chickens clean by a team of 4 women at the annual Chicken Plucking Championship at Marsarytown, Florida, USA is 32.9 sec set on 9 Oct 1976 by Doreena Cary, Diane Grieb, Kathy Roads and Dorothy McCarthy.

TURKEY PLUCKING

Vincent Pilkington of Cootehill, County Cavan, Ireland killed and plucked 100 turkeys in 7 hr 32 min on 15 Dec 1978. His record for a single turkey is 1 min 30 sec on RTE Television in Dublin on 17 Nov 1980.

10. Human Achievements

GUINNESS BOOK OF RECORDS



Earliest non-stop solo
marine circumnavigation

1. ENDURANCE AND ENDEAVOUR

Lunar conquest

Neil Alden Armstrong (b. Wapakoneta, Ohio, USA of Scottish Irish and German ancestry, on 5 Aug 1930), command pilot of the Apollo XI mission, became the first man to set foot on the Moon on the Sea of Tranquility at 02.56 and 15 sec GMT on 20 July 1969. He was followed out of the Lunar Module *Eagle* by Col. Edwin Eugene Aldrin, Jr USAF (b. Glen Ridge, New Jersey, USA of Swedish, Dutch and British ancestry, on 20 Jan 1930), while the Command Module *Columbia* piloted by Lt Michael Collins, USAF (b. Rome, Italy, of Irish and Revolutionary American ancestry, on 31 Oct 1930) orbited above.

Eagle landed at 20.17 and 42 sec. GMT on 20 July and lifted off at 17.54 GMT on 21 July, after a stay of 21 hr 36 min. The Apollo XI had blasted off from Cape Canaveral, Florida at 13.00 GMT on 16 July and was a culmination of the US space programme which, at its peak, employed 376,600 people and attained in the year 1966-7 a peak budget of \$5,900,000,000 (then £2460 million).

There is evidence that Pavel Belagayev was the cosmonaut selected by the USSR for a manned lunar flight in *Zond 7* 219 days before the Apollo XI flight on 9 Dec 1968 but no launch took place.

Altitude Man

The greatest altitude attained by man was when the crew of the ill-fated Apollo XIII were at apocynthion (i.e. their furthest point) 158 miles 254 km above the lunar surface and 248,000 miles 400 187 km above the Earth's surface at 1.21 a.m. BST on 15 Apr 1970. The crew were Capt. James Arthur Lovell, Jr USAF (b. Cleveland, Ohio 25 Mar 1928), Fred Wallace Haise Jr USAF (b. Biloxi, Miss., 14 Nov 1933) and John L. Swigert Jr (b. Denver, Col., 30 Aug 1931).

Altitude Woman

The greatest altitude attained by a woman is 231 km 143.5 miles by Jnr Lt (now Lt Col) Valentina Vladimirovna Tereshkova-Nikolayev (b. 6 Mar 1937) of the USSR, during her 48-orbit flight in *Vostok 6* on 16 June 1963. The record for an aircraft is 24 336 m 79,842 ft by Natalia Prokhanova (USSR) (b. 1940) in an E-33 jet, on 22 May 1965.

Speed Man

The fastest speed at which humans have travelled is 24,791 mph 39 897 km/h when the Command Module of Apollo X carried by Col (now Brig Gen) Thomas Patten Stafford, USAF (b. Weatherford, Okla. 17 Sept 1930), and Cdr Eugene Andrew Cernan (b. Chicago, 14 Mar 1934) and Cdr (now Capt) James A. Watts Young, USN (b. San Francisco, 24 Sept 1930), reached this maximum value at the 400,000 ft 121,9 km altitude interface on its trans-Earth return flight on 26 May 1969.

Speed Woman

The highest speed ever attained by a woman is 28 115 km/h 17,470 mph by Jnr Lt (now Lt Col) Valentina Vladimirovna Tereshkova-Nikolayev (b. 6 Mar 1937) of the USSR in *Vostok 6* on 16 June 1963. The highest speed ever achieved by a woman aircraft pilot is 2687.42 km/h 1669.89 mph by Svetlana Savitskaya (USSR) reported on 2 June 1975.

Land speed Man

The highest speed ever claimed on land is 739.666 mph 1190.377 km/h or Mach 1.0106 by Stan Barrett (US) in *The Blueweiser Rocket*, a rocket engined 3 wheeled car at Edwards Air Force Base, California on 17 Dec 1979 (but see also p. 140).

The official land speed record is 622.287 mph 1001.473 km/h set by Gary Gabelich (b. San Pedro, Calif, 29 Aug 1940) on 23 Oct 1970 on the Bonneville Salt Flats, Utah, USA, in the rocket powered *The Blue Flame*, built by Reaction Dynamics Inc of Milwaukee, Wisconsin, USA.

The highest land speed attained in Britain is 251.19 mph 404.25 km/h by Richard Nobel in his twin Rolls Royce jet powered *Thrust 2* at Greenham Common, Berkshire on 25 Sep 1970.

1980. He attained a speed of 418.118 mph 672,895 km/h across the Bonneville Salt Flats, Utah, USA in *Thrust 2* on 10 Oct 1981.

Land speed Woman

The highest land speed recorded by a woman is 524.016 mph 843,323 km/h by Mrs Kitty Hambleton née O'Neil (US) in the 48,000 hp rocket-powered 3-wheeled S.M.1 *Motivator* over the Alvard Desert, Oregon, USA on 6 Dec 1976. Her official two-way record was 512.710 mph 825,126 km/h and she probably touched 600 mph 965 km/h momentarily.

Water speed Man

The highest speed ever achieved on water is an estimated 300 knots (345 mph 556 km/h) by Kenneth Peter Warby, MBE, (b. 9 May 1939) on the Blowering Dam Lake, NSW, Australia on 20 Nov 1977 in his unlimited hydroplane *Spirit of Australia*. The official world water speed record is 514.39 km/h 319.627 mph set on 8 Oct 1978 by Warby on Blowering Dam Lake.

Woman

The fastest woman on water is Mary Rife (USA), who has driven a drag boat at more than 190 mph 305 km/h.

Water speed Propeller driven

The world record for propeller-driven craft is 202.42 mph 325,76 km/h set by Larry Hill in his supercharged hydroplane *Mr. Ed* off Long Beach, California. On a one-way run *Climax* recorded 205.19 mph 330,22 km/h.

Most travelled Man

The man who had visited more countries than anyone was Jesse Hart Rosdail (1914–77) of Elmhurst, Illinois, USA, a teacher of children in the 5th grade. Of the 168 sovereign countries and 47 *de facto* non-sovereign territories, listed by the *UN Population Report of 1982* making a total of 215, he had visited all excepting only North Korea and French Antarctic Territories. He estimated his mileage was 1,626,605 statute miles 2 617 766 km.

Though he has not visited so many *currently* existing countries, Mehmet S. Ersöz (b. 1904 in Turkey) has travelled much more widely within some 210 countries and is the world's most travelled man. Mr Ersöz's total was 163 by mid-1978. Fred Specovius (West Germany) has visited every sovereign country except São Tomé and North Korea and every non-sovereign territory except 10, making a total of 209 countries.

Horseback

The most travelled man in the horseback era was probably the Methodist preacher Francis Asbury (b. Birmingham, England), who travelled 264,000 miles 424 850 km in North America from 1771 to 1815 preaching 16,000 sermons.

Disabled person

The most countries visited by a disabled person is 120 sovereign and 63 non-sovereign countries by Professor Daniel J. Crowley of Davis, California, USA who has been confined to a wheelchair since March 1946.

Most isolated Man

The farthest any human has been removed from his nearest living fellow man is 2233.2 miles 3596,4 km in the case of the Command Service Module pilot Alfred M. Worden on the US Apollo XV lunar mission of 30 July–1 Aug 1971.

Passport Records

The world's most expensive passports are those from the USSR. In Feb 1982 an emigration permit was 220 roubles (£172) or up to 3500 roubles (over £2700) on the black market. If applications involved a whole family or travel to the West however the necessary accompanying visa was refused, 996 times in each 1000 applications.

Round the World

The fastest time for a round the world trip on scheduled flights for a circumnavigation is 44 hr 6 min by David J. Springbett, 41 of Taplow, Buckinghamshire, from Los Angeles eastabout *via* London, Bahrain, Singapore, Bangkok, Manila, Tokyo and



Mehmet Ersöz, a contender for the title of the most widely travelled man in the world.

Honolulu on 8–10 Jan 1980 over a 23,068 mile 37 124 km route.

The FAI allows any flight taking off and landing at the same point, which is as long as the Tropic of Cancer (*viz* 22,858.754 miles 36 787,599 km) as a circumnavigational flight.

North Pole conquest

The claims of neither of the two US Arctic explorers, Dr Frederick Albert Cook (1865–1940) nor Cdr (later Rear Ad.) Robert Edwin Peary (1856–1920), of the US Naval Civil Engineering branch in reaching the North Pole are subject to positive proof. Cook accompanied by the Eskimos, Ah-pellah and Etukishook, two sledges and 26 dogs, struck north from a point 60 miles 96,5 km north of Svartevoeg, on Axel Heiberg I., Canada, 460 miles 740 km from the Pole on 21 Mar 1908, allegedly reaching Lat. 89° 31' N on 19 Apr and the Pole on 21 Apr. Peary, accompanied by his Negro assistant, Matthew Alexander Henson (1866–1955) and the four Eskimos, Ooqueah, Eginwah, Seegloo, and Ootah (1875–1955), struck north from his Camp Bartlett (Lat. 87° 44' N.) at 5 a.m. on 2 Apr 1909. After travelling another 134 miles 215 km, he allegedly established his final camp, Camp Jessup, in the proximity of the Pole at 10 a.m. on 6 Apr and marched a further 42 miles 67,5 km quartering the sea-ice before turning south at 4 p.m. on 7 Apr. On excellent pack ice Wally Herbert's 1968–9 Expedition (see below) attained a best day's route mileage of 23 miles 37 km in 15 hr. Cook claimed 26 miles 41,8 km twice while Peary claimed a surely unsustainable average of 38 miles 61 km for 8 consecutive days.

The earliest indisputable attainment of the North Pole over the sea-ice was at 3 p.m. (Central Standard Time) on 19 Apr 1968 by Ralph Plaisted (US) and three companions after a 42-day trek in four Skidoos (snow-mobles). Their arrival was independently verified 18 hr later by a US Air Force weather aircraft. The sea bed is 13,410 ft 4087 m below the North Pole.

Naomi Uemura (b. 1941) the Japanese explorer and mountaineer became the first person to reach the North Pole in a solo trek

MILESTONES IN ABSOLUTE HUMAN ALTITUDE RECORDS

Altitude ft	m	Pilot	Vehicle	Place	Date
80'	24	Jean François Pilâtre de Rozier (1757–1785) (France)	Hot Air Balloon (tethered)	Fauxbourg, Paris	15 & 17 Oct 1783
c.330	c.100	de Rozier and the Marquis d'Arlandes (1742–1809) (France)	Hot Air Balloon (free flight)	LaMuette, Paris	21 Nov 1783
c.3,000	c.900	Dr Jacques-Alexander-Cesar Charles (1746–1823)	Charliere Hydrogen Balloon	Tuileries, Paris	1 Dec 1783
c.9,000	c.2,750	and Aimé Robert (France)			
c.13,000	c.4,000	J.-A.-C. Charles (France)	Hydrogen Balloon	Nesles, France	1 Dec 1783
25,400'	7,740	James Sadler (GB)	Hydrogen Balloon	Manchester	May 1785
31,500	9,615	James Glaisher (1809–1903) (UK)	Hydrogen Balloon	Wolverhampton	17 July 1862
36,565	11,145	Prof. A. Berson (Germany)	Hydrogen Balloon Phoenix	Strasbourg, France	4 Dec 1894
51,961	15,837	Sadi Lecoq (France)	Nieuport Aircraft	Issy-les-Moulineaux, France	30 Oct 1900
72,395	22,066	Prof. Auguste Piccard and Paul Kipfer (Switzerland)	FNRS 1 Balloon	Augsburg, Germany	27 May 1931
		Capt Orville A. Anderson and Albert W. Stevens (US Army Air Corps)	US Explorer II Helium Balloon	Rapid City, South Dakota, USA	11 Nov 1935
79,900	24,262	William Barton Bridgeman (USA)			
126,200	38,465	Capt Iven C. Kincheloe, Jr (USAF)	US Douglas D558—11 Skyrocket	California, USA	15 Aug 1951
189,900	57,894	Joseph A. Walker (USA)	US Bell X-2 Rocket 'plane	California, USA	7 Sept 1956
			US X-15 Rocket 'plane	California, USA	30 Mar 1961
Statute miles	Km				
333.2	327	Fit-Major Yuri A. Gagarin (USSR)	USSR. Vostok I Capsule	Orbital flight	12 Apr 1961
334,572	377,268.9	Col Frank Borman, USAF, Capt James Arthur Lovell, Jr, USN and Major William A. Anders, USAF	US Apollo VIII Command Module	Circum-lunar flight	25 Dec 1968
346,555	400,187	Capt James Arthur Lovell Jr, USN, Frederick Wallace Haise Jr and John L. Swigert Jr	US Apollo XIII	Abortive lunar landing mission	15 Apr 1970

There is some evidence that Father Bartolomeu de Gusmao flew in his hot-air balloon in his 4th experiment post August 1709 in Portugal.

Glaisher, with Henry Tracey Coxwell (1819–1900) claimed 37,000 ft 11 275 m from Wolverhampton on 5 Sept 1862. Some writers accept 30,000 ft 9145 m..

Note: A complete progressive table comprising entries from 1783 to date was published in the 23rd edition of 1977.

PROGRESSIVE SPEED RECORDS

Speed m.p.h.	Km/h	Person and Vehicle	Place	Date
25	40	Sledging	Heinola, Finland	c. 6500 BC
35	55	Horse-riding	Anatolia, Turkey	c. 1400 BC
45	70	Mountain Sledging	Island of Hawaii (now USA)	ante AD 1500
50	80	Ice Yachts (earliest patent)	Netherlands	AD 1600
56.75	95	Grand Junction Railway 2–2–2: <i>Lucifer</i>	Madeley Banks, Staffs, England	AD 1825
57.8	141.3	Tommy Todd, downhill skier	La Porte, California, USA	13 Nov 1830
60.0	144.8	Midland Railway 4–2–2 7 ft 9 in single	Amphill, Bedford, England	Mar 1873
100.61	210.2	Siemens and Halske electric engine	Marienfeld-Zossen, near Berlin	Mar 1887
c. 150	c. 257.5	Frederick H. Marriott (fl. 1957) Stanley Steamer <i>Wogglebug</i>	Ormond Beach, Florida, USA	27 Oct 1900
210.64	339	Sadi Lecoq (France) Nieuport-Delage 29	Villesauvage, France	26 Jan 1907
415.2	668.2	Flt Lt (Later Wing Cdr) George Hedley Stainforth AFC <i>Supermarine S.6B</i>	Lee-on-Solent, England	25 Sept 1921
623.85	1004	Flugkapitan Heinz Dittmar Me. 163V-1	Peenemünde, Germany	29 Sept 1931
667	1556	Capt Charles Elwood Yeager, USAF <i>Bell XS-1</i>	Muroc Dry Lake, California	2 Oct 1941
3905	4675.1	Major Robert M. White, North American X-15	Muroc Dry Lake, California	26 Mar 1948
c. 17,580	c. 28,260	Flt Maj Yuri Alekseyevich Gagarin, <i>Vostok 1</i>	Earth orbit	7 Mar 1961
34,335	38,988	Col Frank Borman, USAF, Capt James Arthur Lovell, Jr, USN, Major William A. Anders, USAF	Trans-lunar injection	12 Apr 1961
		<i>Apollo VIII</i>		21 Dec 1968
34,790.8	39,897.0	Cdrs Eugene Andrew Cernan and John Watts Young, USN and Col Thomas P. Stafford, USAF	Re-entry after lunar orbit	26 May 1969
		<i>Apollo X</i>		

Note: A complete progressive table comprising entries from pre-historic times to date was published in the 23rd edition of 1977.

across the Arctic Ice Cap at 4.45 a.m., GMT on 1 May 1978. He had travelled 450 miles 725 km setting out on 7 Mar from Cape Edward, Ellesmere Island in northern Canada. He averaged over 8 miles 13 km per day with his sled 'Aurora' drawn by 17 huskies. He had hoped to average 17 km 10.5 miles per day.

The first woman to set foot on the North Pole was Mrs Fran Phipps, wife of the Canadian bush pilot Weldy Phipps on 5 Apr 1971. Galina Aleksandrovna Lastovskaya (b. 1941) and Lilia Vladislavovna Minina (b. 1959) were crew members of the USSR atomic icebreaker *Arktika* which reached the Pole on 17 Aug 1977.

The soviet scientist Dr Pavel A. Gordienko and 3 companions were arguably the first ever to stand on the exact point Lat. 90° 00' N (± 300 metres) on 23 Apr 1948.

South Pole conquest

The first ships to cross the Antarctic circle (Lat. 66° 30' S.) were the 193 crew of the *Resolution* (462 tons/tonnes) (Capt James Cook RN (1728–79)) and *Adventure* (336 tons/tonnes) (Lt T. Furneaux) on 17 Jan 1773 in 39° E. The first person to sight the Antarctic mainland—on the best available evidence and against claims made for British and Russian explorers—was Nathaniel Brown Palmer (US) (1799–1877). On 17 Nov 1820 he sighted

the Orleans Channel coast of the Palmer Peninsula from his 45 ton/tonnes sloop *Hero*.

The South Pole (alt. 9186 ft 2779 m on ice and 336 ft 102 m bed rock) was first reached at 11 a.m. on 16 Dec 1911 by a Norwegian party led by Capt. Roald Engebereth Graving Amundsen (1872–1928), after a 53-day march with dog sledges from the Bay of Whales, to which he had penetrated in the *Fram*. Subsequent calculations showed that Olav Olavson Bjaaland (the last survivor, dying in June 1961, aged 88) and Helmer Hanssen probably passed within 400–600 m of the exact pole. The other two members were Sverre H. Hassell (d. 1928) and Oskar Wisting (d. 1936).

Women

The first woman to set foot on Antarctica was Mrs Karoline Mikkelsen on 20 Feb 1935. No woman stood on the South Pole until 11 Nov 1969. On that day Lois Jones, Eileen McSaveney, Jean Pearson, Terry Lee Tickhill (all US), Kay Lindsay (Australia) and Pam Young (NZ) arrived by air.

First on both Poles

David S. Porter (b. 1938) of Hope, New Jersey USA visited the South Pole as a guest of the US Navy on 14 Dec 1970 (temperature –38°F –38.8°C). On 9 Apr 1979 he visited the North Pole where the temperature was –39°F –39.4°C.

Endurance and Endeavour

Arctic crossing

The first crossing of the Arctic sea-ice was achieved by the British Trans-Arctic Expedition which left Point Barrow, Alaska on 21 Feb 1968 and arrived at the Seven Island Archipelago north-east of Spitzbergen 464 days later on 29 May 1969 after a haul of 2920 statute miles 4699 km and a drift of 700 miles 1126 km compared with the straight line distance of 1662 miles 2674 km. The team was Wally Herbert (leader), 34, Major Ken Hedges, 34, RAMC, Allan Gill, 38, and Dr Roy Koerner, 36 (glaciologist), and 40 huskies. This was the longest sustained journey ever made on polar pack ice and the first indisputable attainment of the North Pole by sledge. Temperatures sank to -47°F $-43,8^{\circ}\text{C}$ during the trek.

Antarctic crossing

The first surface crossing of the Antarctic continent was completed at 1.47 p.m. on 2 Mar 1958, after a trek of 2158 miles 3473 km lasting 99 days from 24 Nov 1957, from Shackleton Base to Scott Base via the Pole. The crossing party of twelve was led by Dr (now Sir) Vivian Ernest Fuchs (born 11 Feb 1908). The 2600 mile 4185 km trans-Antarctic leg of the 1980-82 Trans Globe Expedition was achieved in 66 days on 11 Jan 1981 having passed through the South Pole on 23 Dec 1980. The 3 man party on snowmobiles was led by Sir Ranulph Fiennes (b. 1944).

Longest sledge journeys

The longest totally self-supporting Polar sledge journey ever made was one of 1080 miles 1738 km from West to East across Greenland on 18 June to 5 Sept 1934 by Capt M. Lindsay (1905-1981) (later Sir Martin Lindsay of Dowhill, Bt, CBE, DSO, Lt Arthur S. T. Godfrey, RE, (later Lt Col, k. 1942), Andrew N.

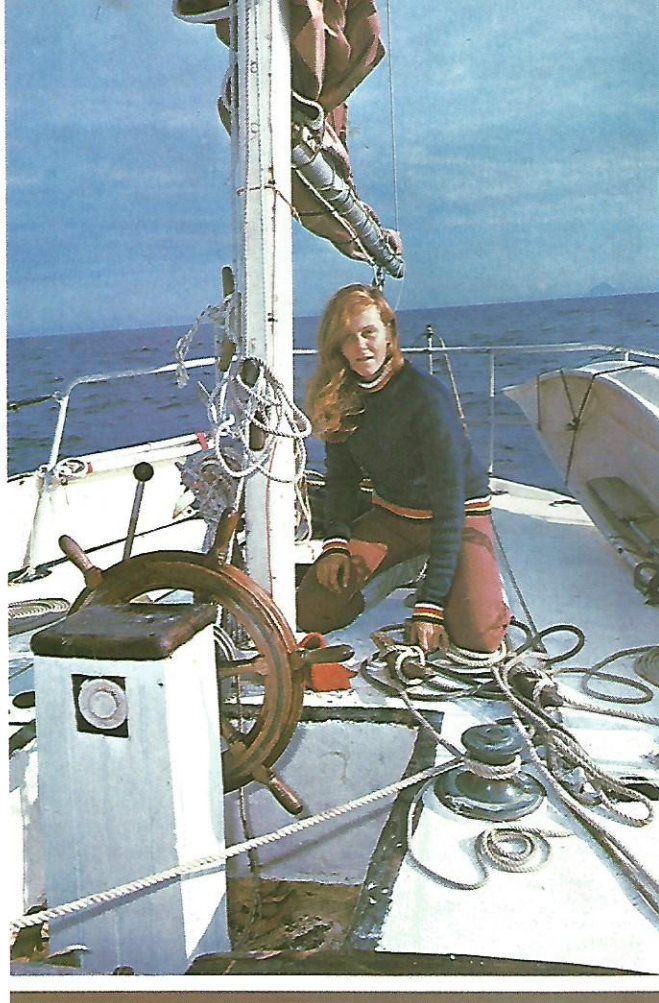
MARINE CIRCUMNAVIGATION RECORDS

(Compiled by Sq Ldr D. H. Clarke, DFC, AFC)

A true circumnavigation entails passing through two antipodal points (which are at least 12,429 statute miles 20,000 km apart)

CATEGORY	VESSEL	NAME	START PLACE AND DATE	FINISH DATE AND DURATION
Earliest*	<i>Vittoria</i> Expedition of Fernão de Magalhães, c. 1480-k. 1521	Juan Sebastian de Elcano or Del Cano (d. 1526) and 17 crew	Seville, Spain 20 Sept 1519	San Lucar, 6 Sept 1522
Earliest British	<i>Golden Hind</i> (ex <i>Pelican</i>)	Francis Drake (c. 1540-96) (Knighted 4 April 1581)	Plymouth, 13 Dec 1577	30,700 miles 49,400 km 26 Sept. 1580
Earliest Woman	<i>Etoile</i>	Crypto-female valet of M. de Commerson, named Baré	St Malo, 1766	1769
Earliest fore-and-aft rigged vessel	<i>Union</i> 98 tons (Sloop)	John Boit Junior, 19-21, (US) and 22 crew	Newport, RI 1794 (via Cape Horn westabout)	Newport, RI 1796
Earliest Yacht	<i>Sunbeam</i> 170 ft 51,8 m 3 Mast Topsail schooner	Lord and Lady Brassey (GB) passengers and crew	Cowes, Isle of Wight 1876	Cowes, Isle of Wight 1877
Earliest Solo	<i>Spray</i> 36 $\frac{3}{4}$ ft 11,20 m gaff yawl	Capt Joshua Slocum, 51, (US) (a non-swimmer) (No 1 solo circum)	Newport, RI, via Magellan Straits, 24 Apr 1895	3 July 1898
Earliest Motor Boat	<i>Speejacks</i> 98 ft 29,87 m	Albert Y. Gowen (US) wife and crew	New York City 1921	46,000 miles 74,000 km
Earliest Woman Solo	<i>Mazurek</i> 31 ft 2 in 9,5 m	Krystyna Chojnowska-Liskiewicz (Poland) (No 58 solo circum)	Las Palmas 28 Mar 1976	New York City 1922
Earliest Woman Solo (via Cape Horn)	<i>Bermudan Sloop</i>	Naomi James (NZ, GB) (later DBE) (No 59 solo circum)	westabout via Panama	Tied knot 21 Mar 1978
Smallest Boat	<i>Express Crusader</i> 53 ft 16,15 m	Shane Acton (GB)	Dartmouth 9 Sept 1977	Dartmouth 8 June 1978
	<i>Super Shrimp</i> 18 ft 4 in 5,58 m	Iris Derungs (Swiss)	(Cape Horn 19 Mar 1978)	(266 days 19 hr)
	<i>Bermuda Sloop</i>		Cambridge, England August 1980	Cambridge, England August 1980
Earliest Submerged	<i>US Submarine Triton</i>	Capt Edward L. Beach USN plus 182 crew	New London, Connecticut 16 Feb 1960	(E-W via Panama Canal) 10 May 1960
Earliest non-stop Solo (Port to Port)	<i>Suhaili</i> 32 4 ft 9,87 m	Robin Knox Johnston CBE (b. 1939) (No 25 solo circum)	Falmouth, 14 June 1968	30,708 miles 49,422 km 22 Apr 1969 (312 days)
Longest non-stop alone at sea	<i>Solitaire</i> 34 ft 10,36 m	Les Powles (GB) (No 70 solo circum)	Lymington, Hants 9 July 1980	Lymington, Hants 3 June 1981
Fastest Solo (multihull)	<i>Manureva</i> (ex <i>Pen Duick IV</i>) 70 ft 21,33 m Trimaran	Alain Colas (France) (No 40 solo circum)	(eastabout via Horn) Saint Malo via Sydney	329 days 29 Mar 1974 (167 days)
Earliest solo in both directions	<i>Solitaire</i> (see above)	Les Powles (GB) (No 62 solo circum)	Falmouth 1975	Lymington 1978
Fastest Solo time (monohull)	<i>Cor Caroli</i> 29 ft 9 in 9,06 m	George Georgiev (Bulgaria) (No 57 solo circum)	(westabout via Panama)	(unsponsored)
Fastest Solo Speed (monohull)	<i>Ocean Bound</i> 41 ft 8 in 12,69 m	David Scott Cowper (GB) (No 63 solo circum)	Havana, Cuba 20 Dec 1976	Havana, Cuba, 20 Dec 1977
Fastest time and fastest speed (yacht)	<i>Flyer</i> 76 ft 23,1 m	Cornelis van Rietschoten (Dutch)	Plymouth 19 Aug 1979	201 days 21 hr 36 min
Fastest (clipper)	<i>James Baines</i> 266 ft 81,07 m	Capt C. McDonald (GB) and crew	(W-E via Cape Horn) Portsmouth 29 Aug 1981	224 days 12 hr 28 min (av speed 131.05 mpd 29 Mar 1982)
Fastest Solo Westabout (via Cape Horn)	<i>Ocean Bound</i> 41 ft 1 in 12,52 m	David Scott Cowper (GB)	Liverpool to Melbourne (58 days) 1854	120 days 6 hr 35 min (220.7 mpd)
Fastest-ever (yacht)	<i>Awahnee II</i> 53 ft 16,15 m	Bob Griffith (US) (5 crew)	Plymouth 22 Sept 1981	Melbourne to Liverpool (69 days) 1855
Fastest-ever (clipper)	<i>Red Jacket</i> 260 ft 79,24 m	Capt S. Reid (GB) and crew		Plymouth 17 May 1982

* Eduard Roditi, author of *Magellan of the Pacific*, advances the view that Magellan's slave, Enrique, was the first circumnavigator. He had been purchased in Malacca but knew the Filipino dialect Visayan, when he reached the Philippines from the east. He 'tied the knot' off Limasawa on 28 Mar 1521. The first to circumnavigate in both directions was Capt Tobias Furneaux, RN (1735-81) as second lieutenant aboard the *Dolphin* from Plymouth east to west via the Magellan Straits in 1766-68 and as captain of the *Adventure* from Plymouth west to east via Cape Horn in 1772-4.



Anna Woolf, who crossed the South and North Atlantic singlehanded in 1976 (see p. 178).

TRANS-ATLANTIC AND PACIFIC MARINE RECORDS

(Compiled by Sq Ldr D. H. Clarke, DFC, AFC)

TRANS-ATLANTIC MARINE RECORDS

CATEGORY	NAME	VESSEL	START	FINISH	DURATION	DATE
Earliest Canoe	Finn-Man (Eskimo)	Kayak 11 ft 10 in 3,6 m	Greenland	Humber, England	*Time not known	1613
Earliest Rowing	John Brown + 5 British deserters from garrison	Ship's boat c. 20 ft 6,1 m	St Helena (10 June)	Belmonte, Brazil (fastest ever row)	28 days (83 mpd)	1799
Earliest Crossing (2 men)	C. R. Webb + 1 crew (US)	Charter Oak 43 ft 13,1 m	New York	Liverpool	35 days 15 hr	1857
Earliest Trimaran (Raft)	John Mikes + 2 crew (US)	Non Pareil, 25 ft 7,62 m	New York	Southampton	51 days	1868
Earliest Solo Sailing (E-W)	Josiah Shackford (US)	15 ton gaff sloop	Bordeaux, France	Surinam (Dutch Guiana)	35 days	1786
Earliest Solo Sailing (W-E)	Alfred Johnson (US)	Centennial 20 ft 6,09 m	Glos., Mass	Wales	46 days	1876
Earliest Woman (with US husband)	Mrs Joanna Crapo (b. Scotland)	New Bedford 20 ft 6,09 m (Bermudan ketch)	Chatham, Mass.	Newlyn, Cornwall	51 days (Earliest with BM rig)	1877
Earliest Single-handed race	J. W. Lawlor (US) (winner)	Sea Serpent 15 ft 4,57 m	Boston (21 June)	Coverack, Cornwall	45 days	1891
Earliest Rowing by 2 men	Georg Harboe and Frank Samuelsen (US)	Fox 18½ ft 5,58 m	New York City (6 June)	Isles of Scilly (1 Aug)	55 days (56 mpd)	1897
Fastest Solo Sailing (West-East)	J. V. T. McDonald (GB)	Inveranty 38 ft 11,58 m	Nova Scotia	Ireland	16 days (147 mpd)	1922
Fastest Canoe (with sail)	Franz Romer (Germany)	Deutscher Sport 21½ ft 6,55 m	Las Palmas	St Thomas	58 days (47 mpd)	1928
Fastest Woman Solo (East-West)	Mrs Ann Davison (GB)	Felicity Ann 23 ft 7,01 m	Portsmouth	Dominica	65 days	1952
Fastest Woman Solo (W-E)	Gladys Bradley (US)	Lugger 18 ft 5,5 m	Las Palmas	(20 Nov 1952)		1953
Fastest Woman Solo (Across 2 oceans)	Anna Woolf (SA)	Zama Zulu 43 ft 13,1 m (Ferroconcrete)	Nova Scotia	Hope Cove, Devon	60 days	1903
Fastest Woman Solo	Naomi James DBE	Kriter Lady 53 ft 16,15 m	Cape Town	Bowling, Scotland	8920 miles in 109 days	1976
Fastest 2-woman crew	Annick Martin (Fr)	Super Marches Bravo 45 ft 13,7 m	Plymouth	Newport, R.I.	25 days 19 hr 12 min	1980
Smallest (Across 2 oceans)	Annie Cordelle (Fr)		Plymouth	Newport, R.I.	21 days 4 hr 28 min	1981
Smallest (East-West)	John Riding (GB)	Sjo Ag 12 ft 3,65 m	Plymouth via Panama	New Zealand, 1973	Lost in Tasman Sea	1964
Smallest (Southern)	Gerry Spiess (US) (see also Transpacific)	Yankee Girl 10 ft 3,05 m	Norfolk, Virginia (1 June)	Falmouth, Eng (24 July)	54 days	1974
Fastest Crossing Sailing (multihull) (East-West)	Hugo S. Vihlen (US)	April Fool 5 ft 11½ in 1,82 m	Casablanca (29 Mar)	Florida (21 June)	85 days	1968
Fastest Crossing Sailing (monohull) (East-West)	Eric Tabarly (France) + 2 crew	Pen Duick IV 67 ft 20,42 m	Tenerife	Martinique	251.4 miles 404,5 km/day (10 days 12 hours)	1968
Fastest Crossing (multihull) (West-East)	Wilhelm Hirtle & crew (Ger)	Kriter II 80 ft 24,38 m	Canary Is.	Barbados	13 days 8 hr	1977
Fastest Crossing (monohull) (West-East)	Marc Pajot (Fr) plus 3 crew	Elf Aquitaine 18,6 m 61 ft	Sandy Hook, NJ 4 July	Lizard, Cornwall	9 days 10 hr 6 min	1981
Fastest Crossing (West-East)	Wilson Marshall (US) & crew	Atlantic 185 ft 56,38 m	Sandy Hook, NJ	Lizard, Cornwall (3054 miles)	av 13.3 kts 12 days 4 hr (fastest noon to noon 341 miles)	1905
Fastest Crossing (Sail) (West-East)	A. Eldridge (US) and crew	Red Jacket (Clipper) 260 ft 79,24 m	Sandy Hook, NJ	Liverpool Bar	12 days	1854
Fastest Solo East-West (Northern) (monohull)	Kazimierz Jaworski (Poland)	Spaniel II 56 ft 17,06 m	Plymouth	Newport, R.I.	277.7 m.p.d. 19 days 13 hr 25 min	1980
Fastest East-West (Northern) monohull	Bruno Bacilieri (It)	Faram Serenissima 66½ ft 20,27 m	Plymouth	Newport R.I.	16 days 1 hr 25 min	1981
Fastest Solo East-West (Northern) (multihull)	Marc Vallin	Mexico 51 ft 15,54 m (Tri)	Plymouth	Newport, R.I.	17 days 23 hr 12 min	1980
Fastest Solo East-West (Southern) (monohull)	Philip Weld (US)	Gipsy Moth V 57 ft 17,37 m	Portuguese Guinea	Nicaragua	179.1 miles 288,2 km/day (22.4 days)	1970
Fastest Ever Yacht Sail (N. route) (East-West)	Sir Francis Chichester KBE (GB)	Britannia 22 ft 6,70 m	Plymouth	Newport, R.I.	14 days 13 hr 54 min	1981
Fastest Solo Rowing (East-West)	Chay Blyth (GB)	Britannia 22 ft 6,70 m	Plymouth	Newport, R.I.	212.1 mpd	
Fastest Solo Rowing (West-East)	Rob James (GB)	Khaggavisana 19¾ ft 6,02 m	Penzance, Cornwall	Miami, Florida via Antigua	37.8 miles 60,8 km/day	1970
Fastest Solo Rowing (East-West)	Sidney Genders, (51 years) (GB)	Captaine Cook 5,60 m 18 ft 4 in	Chatham, Mass	Ushant,	160 days 8 hr	
Fastest Solo Rowing (East-West)	Gérard d'Aboville (Fr)	Britannia 22 ft 6,70 m	10 July	France 20 Sept	71 days 23 hr	1980
Fastest Solo Rowing (West-East)	John Fairfax (GB)	Super Silver 20 ft 6,90 m	Las Palmas (20 Jan)	Florida (19 July)	72 km 44.8 mpd	1969
Fastest Solo Rowing (West-East)	Tom McClean (Ireland)		St John's, Newfoundland (17 May)	Black Sod Bay, Ireland (27 July)	180 days	1969
Youngest Solo Sailing	David Sandeman (17½ years) (GB)	Sea Raider 35 ft 10,67 m	Jersey, C.I.	Newport, R.I.	43 days	1976
Oldest Solo Sailing	Monk Farnham (72 years 270 days)	Seven Bells 28 ft 8,53 m	Hampton, Virginia	Falmouth	40 days (from Bermuda)	1981

TRANS-PACIFIC MARINE RECORDS

Fastest (Trans Pac)	Bill Lee (US)	Merlin 67 ft 20,42 m	Los Angeles, Cal	Honolulu, Hawaii	8 days 11 hr 1 min	1977
Fastest Yacht (Australia-Horn)	O.K. Pennendrecht (Fr) + 13 crew	Kriter II 80 ft 24,38 m	Sydney	Cape Horn	21 days (275 mpd)	1975.6
Fastest Clipper (Australia-Horn)	Capt J. N. Forbes (GB) + crew	Lightning 244 ft 74,36 m	Sydney	Cape Horn	19 days 1 hr (315 mpd)	1854
Fastest Solo Monohull (Australia-Horn)	Chris Baranowski (Poland)	Polagez 45 ft 3 in 13,8 m	Hobart	Cape Horn	45 days	1973
Fastest Solo Multihull (Australia-Horn)	(No 36 solo circum)	Pen Duick IV trimaran 70 ft 21,33 m	Sydney	Cape Horn	(135 mpd) 37 days	1973.4
Fastest Solo (Woman)	Alain Colas (Fr)	Sea Sharp II 31 ft 9,45 m	Yokohama, Japan	San Diego, Cal	(160 mpd) 75 days (5911 miles)	1969
Fastest Rowing	Sharon Sites Adams (US)	Britannia II 35 ft 10,66 m	San Francisco, Cal	Hayman I., Australia	362 days	1971
Fastest Rowing Solo	John Fairfax (GB)	Waka Moana 24 ft 7,3 m	Cal. 26 Apr 1971	22 Apr 1972		1972
Fastest Rowing Solo	Sylvia Cook (GB)		Chile (2 June)	Samoa	118 days	1974
Fastest Rowing Solo	Anders Svedlund (Sweden)		Long Beach, Cal	Sydney	105 days	1981
Smallest Sailing	Gerry Spiess (US)	Yankee Girl 10 ft 3,05 m				

NOTE—The earliest single-handed Pacific crossings were achieved East-West by Bernard Gilboy (US) in 1882 in the 18 ft 5,48 m double-ender *Pacific* to Australia and West-East by Fred Rebel (Lithuanian) in the 18 ft 5,48 m *Elaine*, (from Australia) and Edward Miles (US) in the 36¾ ft 11,2 m *Sturdy II* (from Japan) both in 1932, the latter via Hawaii.

C. Craft (later Col, DSO) and 49 dogs. The first ice-cap crossing was that of Nansen who in 1888 travelled from South-east Greenland with man-hauled sledges to the West Coast.

Deepest ocean descent

The record ocean descent was achieved in the Challenger Deep of the Marianas Trench, 250 miles 400 km south-west of Guam, in the Pacific Ocean, when the Swiss-built US Navy bathyscaphe *Trieste*, manned by Dr Jacques Piccard (b. 1914)

(Switzerland) and Lt Donald Walsh, USN, reached the ocean bed 35,820 ft (6.78 miles 10917 m) down, at 1.10 p.m. on 23 Jan 1960 (see page 64). The pressure of the water was 16,883 lbf/in² 1183 kgf/cm² and the temperature 37.4° F 3° C. The descent required 4 hr 48 min and the ascent 3 hr 17 min.

Deep diving records

The record depth for the extremely dangerous activity of breath-held diving is 282 ft 85,9 m by Jacques Mayol (France) off Elba,

Italy, on 9 Nov 1973 for men and 147½ ft 45 m by Giuliana Trel-
eani (Italy) off Cuba in September 1967 for women. The press-
ure on Mayol's thorax was 136.5 lbf/in² 9,6 kgf/cm² and his pulse
fell to 36. Enzo Maiorca (Italy) surfaced unconscious from a dive
of 87 m 285 ft off Sorrento, Italy on 27 Sept 1974. The record
dive with Scuba (self-contained under-water breathing
apparatus) is 437 ft 133 m by John J. Gruener and R. Neal
Watson (USA) off Freeport, Grand Bahama on 14 Oct 1968.
The record dive utilizing gas mixtures (nitrogen, oxygen and
helium) is a simulated dive of 2250 ft 685,8 m in a dry chamber
by Stephen Porter, Len Whitlock and Erik Kramer at the Duke
University Medical Center in Durham, North Carolina on 3 Feb
1981 in a 43 day trial in a sphere of 8 ft 2,43 m. Some divers have
survived free swimming for short intervals at depths of 1400 ft
426 m.

Deepest underwater escape

The deepest underwater rescue achieved was of the *Pisces III* in
which Roger R. Chapman, 28 and Roger Mallinson, 35 were
trapped for 76 hr when it sank to 1575 ft 480 m 150 miles 240 km
south-east of Cork, Ireland on 29 Aug 1973. She was hauled to
the surface by the cable ship *John Cabot* after work by *Pisces V*,
Pisces II and the remote control recovery vessel US CURV on 1
Sept. The greatest depth of an actual escape without any equip-
ment has been from 225 ft 68,58 m by Richard A. Slater from
the rammed submersible *Nekton Beta* off Catalina Island, Cali-
fornia, USA on 28 Sept 1970.

Deepest salvage

The greatest depth at which salvage has been achieved is
16,500 ft 5029 m by the bathyscaphe *Trieste II* (Lt Cdr Mel Bart-
els, USN) to attach cables to an 'electronic package' on the sea
bed 400 miles 645 km north of Hawaii on 20 May
1972. Project Jennifer by USS *Glomar Explorer* in
June/July 1974 to recover a Golf class USSR sub-
marine, 750 miles 1200 km NW of Hawaii, cost
\$550 million but was not successful.

Flexible dress divers

The deepest salvage operation ever achieved with
divers was on the wreck of HM Cruiser *Edinburgh*
sunk on 2 May 1942 in the Barents Sea off Northern
Norway inside the Arctic Circle in 803 ft 244,7 m of
water. Twelve divers dived on the wreck in pairs
using a bell from the *Stephaniturm* (1423 tons) over
32 days under the direction of former RN officer
and project director Michael Stewart from 17 Sept
to 7 Oct 1981.



above: Mrs Mary Henrietta Anne Moody, 101, the world's most durable chairman (see p. 181).



above: The wedding scene in 1932 in Cleveland, Ohio of the triplet Pufpaff sisters Lucille, Marie and Alma.
left: The triplets as they appear on their joint Golden Wedding day on 12 April 1982 (see p. 180).



The 431 gold ingots were divided; £14.6 million to the USSR, £7.3 million to HM Government and some £18 million to the salvage contractors, Jessop Marine Recoveries Ltd (10%) and Wharton Williams Ltd (90%). Keith Cooper, 28 was the first to touch the gold. The longest decompression time was 7 days 10 hr 27 min. The £39.9 million is an all-time record.

Greatest penetration into the earth

The deepest penetration made into the ground by man is in the Western Deep Levels Mine at Carletonville, Transvaal, South Africa where a record depth of 3777 m 12,500 ft (2.36 miles) has been attained. The rock temperature at this depth is 131° F 55° C.

Shaft sinking record

The one month (31 days) world record is 1251 ft 381.3 m for a standard shaft 26 ft 7.92 m in diameter at Buffelsfontein Mine, Transvaal, South Africa, in March 1962. The British record of 128.73 m 422 ft of 7.92 m 26 ft diameter shaft was set in No 2 Shaft of the NCB's Stilling Fleet Mine in 31 days (18 Nov-19 Dec 1980).

Longest on a raft

The longest recorded survival alone on a raft is 133 days (4½ months) by Second Steward Poon Lim (born Hong Kong) of the UK Merchant Navy, whose ship, the SS *Ben Lomond*, was torpedoed in the Atlantic 565 miles 910 km west of St Paul's Rocks in Lat. 00° 30' N Long. 38° 45' W at 11.45 a.m. on 23 Nov 1942. He was picked up by a Brazilian fishing boat off Salinópolis, Brazil, on 5 Apr 1943 and was able to walk ashore. In July 1943, he was awarded the BEM and now lives in New York City.

Maurice and Maralyn Bailey survived 118½ days in an inflatable dinghy 4½ ft 1.37 m in diameter in the north-east Pacific from 4 Mar to 30 June 1973.

Most marriages World

The greatest number of marriages accumulated in the monogamous world is 23 by the former minister of religion Glynn de Moss Wolfe (US) (b. 1908) who married for the 25th time since 1931 his 23rd wife in May 1982. His total number of children is, he says, 41 aged between 56 and 2. He has long kept two wedding dresses (different sizes) in his closet for ready use. He has additionally suffered 19 mothers-in-law. The most often marrying millionaire was Thomas F. Manville (1894-1967) who contracted his 13th marriage to his 11th wife Christine Erdlen Popa (1940-71) aged 20, in New York City, USA, on 11 Jan 1960 when aged 65. His shortest marriage (to his seventh wife) effectively lasted only 7½ hr. His fortune of \$20 million came from asbestos, neither of which he could take with him.

Mrs Beverly Nina Avery, then aged 48, a bar-maid from Los Angeles, California, USA, set a monogamous world record in October 1957 by obtaining her sixteenth divorce from her fourteenth husband, Gabriel Avery. She alleged outside the court that five of the 14 had broken her nose.

Giovanni Vigliotto, 52 was reported to have been arrested in Panama City on 30 Dec 1981 for 82 or 83 bigamous marriages in more than 25 US States. He specialised in 'larceny by deception'.

Great Britain

The only monogamous citizen married eight times is Olive Joyce Wilson of Marston Green, Birmingham. She has consecutively been Mrs John Bickley; Mrs Don Trethowan; Mrs George Hundley; Mrs Raymond Ward; Mrs Harry Latrobe; Mrs Leslie Harris; Mrs Ray Richards and now Mrs John Grassick. All were divorced except Mr Hundley, who died.

Oldest bride and bridegroom

Dyura Avramovich reportedly aged 101, married Yula Zhivich, admitting to 95, in Belgrade, Yugoslavia in November 1963.

The British record was set by Sir Robert Mayer CH, KCVO (b. 1879) who married Jacqueline Noble, 51 in London on 10 Nov 1980 when aged 101 years.

Mrs Winifred Clark (b. 13 Nov 1871) became Britain's oldest recorded bride when she married Albert Smith, 80, at St. Hugh's Church, Cantley, South Yorkshire the day before her 100th birthday.

Longest engagements

The longest engagement on record is one of 67 years between Octavio Guillen, 82 and Adriana Martinez, 82. They finally took the plunge in June 1969 in Mexico City, Mexico.

Longest marriage World

The longest recorded marriage is one of 86 years between Sir Temulji Bhicaji Nariman and Lady Nariman from 1853 to 1940 resulting from a cousin marriage when both were five. Sir Temulji (b. 3 Sept 1848) died, aged 91 years 11 months, in August 1940 at Bombay. The only reliable instance of an 83rd anniversary celebrated by a couple marrying at normal ages is that between the late Edd (105) and Margaret (99) Hollen, who celebrated their 83rd anniversary on 7 May 1972. They were married in Kentucky on 7 May 1889. Salus and Minnie Newquist celebrated their 82nd anniversary in Fort Smith, Arkansas USA. He was born in Hunttown on 5 Mar 1880. They have an 81 year old 'child' and 39 great-great-grandchildren.

Great Britain

James Frederick Burgess (born 3 March 1861, died 27 Nov 1966) and his wife Sarah Ann, née Gregory (born 11 July 1865, died 22 June 1965) were married on 21 June 1883 at St James's, Bermondsey, London, and celebrated their 82nd anniversary.

Golden Weddings

Despite the advent of the computer, records on golden (or 50 year long) weddings remain still largely uncollated. Unusual cases reported include that of Mrs Agnes Mary Amy Mynott (b. 25 May 1887) who attended the golden wedding of her daughter Mrs Violet Bangs of St. Albans on 20 Dec 1980, 23 years after her own. The 3 sons and 4 daughters of Mr and Mrs J. Stredwick of East Sussex all celebrated golden weddings between May 1971 and April 1981. Triplets Lucille (Mrs Vogel), Marie (Mrs McNamara) and Alma (Mrs Prom) Puffaff all celebrated their golden weddings on 12 Apr 1982 having all married in Cleveland, Ohio in 1932.

Most married

Jack V. and Edna Moran of Seattle, Washington, USA have married each other 40 times since the original and only really necessary occasion on 27 July 1937 in Seaside, Oregon. Subsequent ceremonies have included those at Banff, Canada (1952), Cairo, Egypt (1966) and Westminster Abbey, London (1975).

Mass ceremony

The largest mass wedding ceremony was one of 1800 couples officiated over by Sun Myung Moon of the Holy Spirit Association for the Unification of World Christianity in Seoul, South Korea on 14 Feb 1975. The response to the question 'Will you swear to love your spouse for ever?' is 'Ye'. The Rev Moon was reported in January 1981 to be planning a mass ceremony in New York City for 10,000 couples.

Most Expensive Wedding

The most expensive private wedding is reputed to be that of Maria Niarchos, 20 to Alix Chevassus, 36 at her father Stavros's estate in Normandy, France on 16 June 1979. Though guests consumed an estimated 12,000 bottles of champagne and red wine, the supply of caviar outweighed the demand in four football field sized marquees. The cost was conservatively estimated at \$500,000 (then £250,000).

Slowest Divorce

In March 1980 a divorce was reported in the Los Angeles Superior Court, California between Bernardine and Leopold Delpes in which both parties were aged 88. The British record age is 101 years by Harry Bidwell at Brighton, Sussex on 21 Nov 1980.

Dining out

The world champion for eating out is Fred E. Magel of Chicago, Illinois, USA who since 1928 has dined out 45,000 times in 60 nations as a restaurant grader (to 20 May 1982). He asserts the one serving the largest helpings is Zehnder's Hotel, Frankenmuth, Michigan, USA. Mr Magel's favourite dishes are South African rock lobster and mousse of fresh English strawberries.

Party giving

The most expensive private party ever thrown was that of Mr

and Mrs Bradley Martin of Troy, NY, USA staged at the Waldorf Hotel, Manhattan in February 1897. The cost to the host and hostess was estimated to be \$369,200 in the days when dollars were made of gold.

The 'International Year of the Child' children's party in Hyde Park, London was attended by Royal Family and 160,000 children on 30-31 May 1979. The longest street party ever staged was for 5500 children by the the Oxford Street Association to celebrate the Royal Wedding on 25 July 1981 along the entire length from Park Street to St. Giles Circus, London.

The largest Christmas Party ever staged was that thrown by The Boeing Company in the 65,000 seat Kingdome, Seattle, Washington, USA, in two shows totalling 103,152 people on 15 Dec 1979, managed by general chairman John Mathiasen and produced by Greg Thompson with a cast of 2500. The floor was decorated with 1000 Christmas trees each with 100 lights; 150,000 snow white balloons and three ice ponds.

Toastmasters

The Guild of Professional Toastmasters (founded 1962) has only 12 members. Its founder and President, Ivor Spencer, listened to a speech in excess of 2 hr by the maudlin guest of honour of a retirement luncheon. The Guild also elects the most boring speaker of the year, but for professional reasons, will not publicize the winners' names until a decent interval has elapsed. Red coats were introduced by the pioneer professional, William Knight-Smith (d. 1932) c. 1900.

Lecture agency

The world's largest lecture agency is the American Program Bureau of Boston, Mass., USA, with 400 Personalities on 40 Topics and a turnover of some \$5 million. The top rate reported in March 1981 was \$40,000 (£18,000) reportedly commanded by Johnny Carson and Bob Hope.

Working week

A case of a working week of 142 hours was recorded in June 1980 by Dr Paul Ashton, 32 the anaesthetics registrar at Birkenhead General Hospital, Merseyside. This left an average each day of 3 hr 42 min 51 sec for sleep. Some non-consultant doctors are actually contracted to work 110 hours a week or be available for 148 hours. Some contracts for University lecturers call for a 3 hr week or a 72 hr year spread over 24 weeks.

Working career

The longest working life has been that of 98 years by Mr Izumi (see Chapter 1, pp. 16-17), who began work goading draft animals at a sugar mill at Isen, Tokunashima, Japan in 1872. He retired as a sugar cane farmer in 1970 aged 105.

The longest working life recorded in the United Kingdom was that of Susan O'Hagan (1802-1909) who was in domestic service with 3 generations of the Hall family of Lisburn, near Belfast, Northern Ireland for 97 years from the age of 10 to light duties at 107.

The longest recorded industrial career in one job in Britain was that of Miss Polly Gadsby who started work with Archibald Turner & Co of Leicester aged 9. In 1932, after 86 years service, she was still at her bench wrapping elastic, at the age of 95. Mr Theodore C. Taylor (1850-1952) served 86 years with J. T. & T. Taylor of Batley, West Yorkshire including 56 years as chairman. Currently the longest serving and the oldest chairman (appointed July 1926) of any board of directors is Mrs Mary Henrietta Anne Moody (b. 7 Apr 1881) of Mark & Moody Ltd, printers and booksellers of Stourbridge, West Midlands. Edward William Beard (b. 18 Apr 1878), a builder of Swindon, Wiltshire retired in October 1981 from the firm he founded in 1896 after 85 years.

Milkman, Longest serving

Britain's longest serving milkman was Mr John Baggs (b. August 1884) of Horndean, near Portsmouth, Hampshire, who had been on his round for over 80 years ('I don't like sitting about'). He was assisted by his boy John Baggs Junior, aged 64.

Most durable coal miner

George Stephenson (b. 21 Apr 1833) worked at William Pit, a

Whitehaven Colliery, Cumbria from 1840 (aged 7) for 82 years until his retirement in 1922. He died on 18 Mar 1926 aged 92 years 10 months having received a testimonial of £54 12s.

Longest pension

Miss Millicent Barclay, daughter of Col William Barclay was born posthumously on 10 July 1872 and became eligible for a Madras Military Fund pension to continue until her marriage. She died unmarried on 26 Oct 1969 having drawn the pension for every day of her life of 97 years 3 months.

Doctors Oldest

The oldest doctor currently known to be in practice is Dr Gallo Leoz (b. 2 Apr 1879). He practises in Madrid, Spain as an ophthalmologist.

Doctors Most in a family

Eight sons of John Robertson of Benview, Dumbarton, Scotland graduated as medical doctors between 1892 and 1914. Harry Lewis Lutterloh and Elizabeth Grantham of Chatham County, North Carolina USA were the grandparents of 19 medical doctors. From 1850 to 1982 they practiced a total of 704 man-years.

MISCELLANEOUS ENDEAVOURS

Accordion playing

Norman English of Fanfare Music, Chorley, Lancs played an accordion for 82 hr 50 min on 6-9 Apr 1981.

Apple peeling

The longest single unbroken apple peel on record is one of 172 ft 4 in 52,51 m peeled by Kathy Waffer, 17 of Wolcott, NY, USA in 11 hr 30 min at Long Ridge Mall, Rochester, NY on 16 Oct 1976. The apple weighed 20 oz 567 g.

Apple picking

The greatest recorded performance is 365½ US bushels (354.1 Imperial bushels 128,80 hectolitres) picked in 8 hr by George Adrian, 32 of Indianapolis, Indiana on 23 Sept 1980.

Bag-carrying

The greatest non-stop bag-carrying feat carrying 1 cwt 50,8 kg of household coal in an open bag is 23 miles 37,01 km by Alan M. Jones (b. 17 Mar 1947) in 5 hr 53 min at the Family Fitness Center, Bellevue, Washington, USA on 6 May 1981.

The record for the 1012,5 m 1107.2 yd course annual Gawthorpe, West Yorkshire race is 4 min 19 sec by Terry Lyons, 36 on 16 Apr 1979.

Bag-pipes

The longest duration pipe has been one of 100 hr by Neville Workman, Clive Higgins, Patrick Forth and Paul Harris, playing two at a time in shifts, of Churchill School Pipe Band, Salisbury, Zimbabwe on 9-13 July 1976.

Balancing on one foot

The longest recorded duration for balancing on one foot is 33 hr by V. S. Kumar Anandan of Colombo, Sri Lanka on 15-17 May 1980. The disengaged foot may not be rested on the standing foot nor may any sticks be used for support or balance.

Ball punching

The world duration ball punching record is 146 hr 20 min by Pat McEnteggart of Shallon, Julianstown, Co. Meath, Ireland on 27 Feb-5 Mar 1981.

Balloon flights

The longest reported toy balloon flight is one of 9000 miles 14 500 km from Atherton, California, USA, (released by Jane Dorst on 21 May 1972) and found on 10 June at Pietermaritzburg, South Africa. The longest recorded hydrogen-filled balloon flight from the geographical British Isles is one of 5880 miles 9460 km from Jersey which was returned from Camps Bay, Cape Province, South Africa on 28 Apr 1974, 43 days after release by Gerard Wankling.

Balloon release

The largest ever mass balloon release has been one of 208,447 at the Sands Hotel re-opening in Las Vegas, Nevada, USA on 15 Jan 1982 arranged by Tommy Walker Spectaculars.

HUMAN ACHIEVEMENTS

Band marathons

The longest recorded 'blow-in' is 100 hr 2 min by the Du Val Senior High School, Lanham, Maryland, USA on 13-17 May 1977.

Band One-man

Don Davis of Hollywood, California, USA, was the first one-man band able to play 4 melody and 2 percussion instruments simultaneously without electronics in 1974. For his rendition of the 4th movement of Beethoven's Fifth, he utilizes his unique 8-prong pendular perpendicular piano pounder and semicircular chromatic radially-operated centrifugally sliding left-handed glockenspiel. The greatest number of instruments played in a single tune is 75 in 2 min 11.2 sec by Rory Blackwell at the EMI Bingo and Social Club, Derry's Cross, Plymouth, Devon on 6 Sept 1977. Dave Sheriff of Rugby, Warwickshire, played his one-man band (which must include at least 3 instruments played simultaneously) for 50 hr 48 sec on 25-27 Jan 1982 at the New Cresta Cabaret Restaurant, Solihull, W. Midlands. On 8 Feb 1982 Dave Sheriff (see above) played 9 instruments (3 melodic and 6 percussion simultaneously at the BBC studios, Birmingham.

Barrel jumping (on Ice Skates)

The official distance record is 29 ft 5 in 8,99m over 18 barrels by Yvon Jolin at Terrebonne, Quebec, Canada in 1981.

The feminine record is 20 ft 4½ in 6,21m over 11 barrels by Janet Hainstock in Michigan on 15 Mar 1980.

Barrel rolling

The record for rolling a full 36 gallon metal beer barrel over a measured mile is 8 min 15 sec by a team of six from Tinwald Rugby Club, Ashburton, New Zealand on 3 Mar 1980.

Barrow pushing

The heaviest loaded barrow pushed for a minimum 20 ft is one loaded with 289 bricks weighing a gross 1.05 tons (2347 lb 1064,5 kg) by Bill Richardson of Pontefract, Yorks on 30 June 1979.

Barrow Racing

The fastest time reached for a 1 mile 1,609 km wheelbarrow race is 5 min 1.59 sec by Bryan Zellweger ('charger') and Jack Zellweger ('rider') at the Ladner Centennial Sports Festival, Delta, BC, Canada on 1 July 1979

Brothers-in-law Malcolm Shipley and Adrian Freeburg pushed each other from John O'Groats to Land's End for charity in 30 days from 28 July-26 Aug 1981.

Bath tub racing

The record for the annual international 36 miles 57,9 km Nanaimo to Vancouver, British Columbia bath tub race is 1 hr 29 min 40 sec by Gary Deathbridge (Australian) on 30 July 1978. Tubs are limited to 75 in 1,90 m and 6 hp motors. The greatest distance for paddling a hand propelled bath tub in 24 hr is 55 miles 425 yd 88,90 km by a team of 25 from Worcester Canoe Club on 28/29 Sept 1979.

Baton twirling

Four members of the Brownhills Majorettes of Walsall, W Midlands twirled for 78 hr 2 min on 20-23 July 1981.

Beard of bees

A beard of bees estimated at not less than 21,000 swarmed on the chest and throat of Don Cooke, Ohio, USA on 20 June 1980. The British record is 20,000 on the bare chest and throat of Howard Davis of Bridgwater, Somerset in May 1952.

Bed making

The record time set under the rigorous rules of the Australian Bedmaking Championships is 28.2 sec by Wendy Wall, 34, of Ebersham, Sydney, NSW on 30 Nov 1978.

The British record with 1 blanket, 2 sheets, an undersheet, an uncased pillow, 1 counterpane and 'hospital' corners is 24.0 sec by Judith Strange and Catheryn Marsden of High Peak College, Buxton, Derbyshire on 11 Mar 1978.

Miscellaneous Endeavours

Bed of nails

The duration record for non-stop lying on a bed of nails (sharp 6-inch 15,2 cm; 2 in 5 cm apart) is 102 hr 23½ min by the Rev Ken Owen at the YMCA, Port Talbot, W Glamorgan, Wales on 29 Sept-30 Oct 1980. Much longer durations are claimed by uninvigilated *fakirs*—the most extreme case being *Silki* who claimed 111 days in São Paulo, Brazil ending on 24 Aug 1969.

Note: Now that weights in Bed of Nails contests have attained ¾ ton 762 kg the following category has been retired. No further claims for publication will be entertained or published.

The ultimate weight in an Iron Maiden, being sandwiched between two beds of nails, was 1642½ lb 745,02 kg endured by Komar (Vernon E. Craig) at Old Chicago Towne, Chicago, Illinois, USA, on 6 Mar 1977.

Bed pushing

The longest recorded push of a normally sessile object is of 3233 miles 1150 yd 5204 km in the case of a wheeled hospital bed by a team of 9 employees of Bruntisfield Bedding centre, Edinburgh on 21 June-26 July 1979.

Bed race

The record time for the annual Knaresborough Bed Race (established 1966) in North Yorkshire is 13 min 28 sec for the 2 mile 63 yd 3,27 km course crossing the River Nidd by the ICI Fibres Flying Fiasco team on 9 June 1979.

Beer label collecting

The greatest collection of different British Beer labels is 22,000 by Keith Osborne, Hon Sec of The Labologists Society (founded by Guinness Exports Ltd in 1958). His oldest is a Bass label of 1869.

Beer mat flipping

Lack of standardisation of the size and weight of beer mats has bedevilled the chronicling of records in this international pursuit.

A figure of 102 was reported from Stephen Thornton, 22, of Romsey Hants on 16 Jan 1980.

Beer Stein Carrying

Barmaid Rosie Schedelbauer covered 15 m 49 ft 2½ in in 4.0 sec with 5 full steins in each hand in a televised contest at Konigsee, West Germany on 29 June 1981.

Best man

The world's champion 'best man' is Mr Wally Gant, a bachelor fishmonger from Wakefield, West Yorkshire, who officiated for the 50th time since 1931 in December 1964.

Bicycle Most mounting simultaneously

On 6 Aug 1981 at Fuchu, Tokyo, Japan thirteen members of the Mito-Itomi Unicycle Club mounted and rode a single bicycle a distance of 10 m 32.8 ft.

Big Wheel riding

The endurance record for riding a Big Wheel is 37 days by Rena Clark and Jeff Block at Frontier Village Amusement Park, San Jose, California, USA on 1 July-7 Aug 1978.

Billiard table jumping

Joe Darby (1861-1937) cleared a full-sized 12 ft 3,65 m billiard table lengthwise, taking off from a 4 in 10 cm high solid wooden block, at Wolverhampton, West Midlands on 5 Feb 1892.

Bomb defusing

The highest reported number of unexploded bombs defused by any individual is 8000 by Werner Stephan in West Berlin, Germany, in the 12 years from 1945 to 1957. He was killed by a small grenade on the Grunewald blasting site on 17 Aug 1957.

Bond signing

The greatest feat of bond signing was that performed by Arne Aaser of Den Norske Creditbank, Oslo who signed 20,000 bonds in 16 hr 2 min 50 sec on 4-5 Mar 1982.



Most on one bicycle—the 13 members of the Mito-Itomi Unicycle Club in action at Fuchu, Tokyo, Japan in 1981 when they set a record (see p. 182).

Jones on 3 June 1979, and 1 mile (team): 21 min 25 sec + 118 penalties giving an overall time of 23 min 23 sec by William Davis & Company (Leicester) Ltd, on 15 June 1980.

Boomerang throwing

The earliest mention of a word similar to *boomerang* is *wo-mur-rang* in Collins *Acct. N.S. Wales Vocab.* published in 1798. The earliest certain Australian account of a returning boomerang (term established, 1827) was in 1831 by Major (later Sir Thomas) Mitchell. Curved throwing sticks for wild fowl hunting were found in the tomb of Tutankhamun dating from the mid 14th century BC.

World championships and codified rules were not established until 1970. Jeff Lewry has won in 1970–71–72–73 and also the Australian title in 1974. The Boomerang Association of Australia's championship record for distance reached from the thrower before the boomerang returns is 107 m 351 ft diameter by Bob Burwell in the 1981 championships. The longest unofficial out and return record on record is one of 370 ft 112.7 m by Al Gerhards at Old Westbury, Long Island, NY on 20 Oct 1979. Adri van der Berge (Netherlands) kept a boomerang aloft for 29.9 sec at Bièvres, France on 27 Sept 1981.

Brick carrying

The greatest distance achieved for carrying a brick 8 lb 15 oz 4,053 kg in a nominated ungloved hand in an uncradled downward pinch grip is 45 miles 72.4 km by David and Kym Barger of Lamar, Missouri, USA on 21 May 1977.

The feminine record for a 9 lb 12 oz 4,422 kg brick is 19.2 miles 30.89 km by Cynthia Ann Smolko of Denville, New Jersey, USA on 14 May 1977. The British record for a 6 lb 2,72 kg smooth-sided brick is 3 miles 4,82 km by Karen Stevenson of Wallasey, Merseyside on 24 Jan 1981.

Bricklaying

Ralph Charnock of Benfleet, Essex set The Brick Development Association Bricklaying Championship record at Colindale, north-west London on 30 Sept 1981. He laid 711 bricks in 60 minutes, according to the strict rules of the Guild of Bricklayers.

Brick racing

The record times recorded at the Annual NFBTE Young Builders Dry-brick championship in Leicester are 100 metres: 1 min 7.0 sec + 11 penalty points giving a gross 1 min 18.0 sec by Ian

Brick throwing

The greatest reported distance for throwing a standard 5 lb 2,268 kg building brick is 44.54 m 146 ft 1 in by Geoffrey Capes at Braybrook School, Orton Goldhay, Cambridgeshire on 19 July 1978.

Bubble gum blowing

The greatest reported diameter for a bubble gum bubble is 19¼ in 48.9 cm by Susan Montgomery, 18 of Fresno, Calif, USA in April 1979. The British record also using 'Bubble Yum' is 16½ in 41.91 cm by Nigel Fell, 13 from Derriagh, N. Ireland in November 1979.

The mighty Bill Richardson of Pontefract, Yorkshire pushing a brick-laden barrow weighing more than a ton (see p. 182).



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Burial alive

Voluntary burial alive (for which claims up to 217 days have been published) are inadmissible unless the depth of the coffin is a minimum 2 m 6 ft 6¾ in below ground; the coffin has a maximum cubic capacity of 1.5 million cc or 54 ft³ and the aperture for communication and feeding has a maximum dimension of 10 cm or 4 inches.

'Country' Bill White, 44, used an inadmissible 8 in square 20,3 x 20,3 cm aperture in his 134 day 2 hr 5 min burial at New Bedford, Massachusetts on 29 Jan-12 June 1978 but the Sheriff of Bristol County certified that he remained underground throughout.

Camping Out

Two brothers Sven and Per and a sister Kari Heistad of Lebanon, New Hampshire, USA have never slept indoors since March 1974. The coldest they have experienced has been Christmas morning 1980 with a wind chill temperature of -67°F -55°C, which to them is a 'three-bag night'. Also remarkably the family have no television.

Canal Jumping

In the 1979 Fierljeppen Championship at Winsam, Friesland, Netherlands, Catharinus Hoekstra leapt 17,39 m 57 ft across the water with a pole. A distance of 18,40 m 60 ft 4 in has been attributed to Aarth de Wit.

Can top collecting

The longest recorded one-man chain of can tops is one of 11.2 miles 18,02 km collected since 4 July 1969 by Arthur J. Jordan Sr of Yorkstown, Virginia, USA to the estimated number of 710,000 as of 14 May 1979.

Card throwing

Kevin St Onge threw a standard playing card 185 ft 1 in 56,41 m at the Henry Ford Community College Campus, Dearborn, Michigan, USA on 12 June 1979.

Carriage Driving

The only man to drive 48 horses in a single hitch is Dick Sparrow of Zeaaring, Iowa, USA in 1972-77. The lead horses were 135 ft 41 m away.

Car wrecking

The greatest number of cars wrecked in a stunting career is 1643 on 1 July 1982 by Dick Sheppard of Gloucester, England.

Catapulting

The greatest recorded distance for a catapult shot is 1362 ft 415 m by James F. Pfothenauer using a patented 16½ ft 5,02 m 'Monarch IV Supershot' and a 53 calibre lead shot on Ski Hill, Escanaba, Michigan, USA on 10 Sept 1977.

Champagne fountain

The tallest successfully filled column of champagne glasses is one 21 high filled from the top by Carl Groves and Keith Pepper at Frankston, Vic, Australia on 10 Mar 1981. Joseph Achenback, Steven Arnold, Donald Milonowski and Timothy Twedale of F.E.A.S.T. equalled the world record with 21 on 26 Apr 1981 at the Hilton Hotel, Grand Rapids, Michigan, USA.

Clapping

The duration record for continuous clapping (sustaining an average of 140 claps per min audible at 100 yd 91 m) is 50 hr 17 min by Ashrita Furman of Jamaica, New York, USA on 10-12 Aug 1981.

Club swinging

Albert Rayner set a world record of 17,512 revolutions (4.9 per sec) in 60 min at Wakefield, W Yorkshire on 27 July 1981. M. Dobrilla swung continuously for 144 hr at Cobar, NSW finishing on 15 Sept 1913.

Coal cutting

The most productive coal mine in Britain has been Bagworth Colliery, Leicestershire with 5.8 tonnes per man shift in the 41 weeks from April to 31 Dec 1980. The colliery dates from 1829. The individual record for filling is 218 tons in a week of 5 shifts by Jim Marley (b. 1914) at East Walbottle Colliery, Tyne and Wear, England in 1949. This included 47½ tons in 6 hr.

Miscellaneous Endeavour

Coal shovelling

The record for filling a half-ton 508 kg hopper with coal is 31.5 sec by Robert Taylor of Dobson, New Zealand on 7 Feb 1981.

Coin balancing

The greatest recorded feat of coin-balancing is the stacking of 170 Canadian coins on top of a Canadian Commemorative penny which was freestanding vertically on another coin by Bruce McConachy (b. 1963) of West Vancouver, BC, on 24 Aug 1979.

Coin snatching

The greatest number of 10p pieces clean caught from being flipped from the back of a forearm into the same palm is 62 by Andrew Gleed at the *Evening Star* offices, Ipswich on 22 Sep 1978. It is contended that claims beyond 100 coins (using US 25 cent pieces) are beyond the capacity of the human hand. Such claims remain under investigation.

Competition winnings

The largest individual competition prize win on record is \$307,500 (then £109,821) by Herbert J. Idle, 55, of Chicago in an encyclopaedia contest run by Unicorn Press Inc on 20 Aug 1953. The highest value first prize offered in Britain has been a fully furnished Thatched Cottage worth 'over £30,000' by Country Life English Butter for an 'order of merit' contest with 3,628,880 permutations closing on 31 July 1980.

Complainer Most successful

Ralph Charell (b. 3 Dec 1929), author of *How I Turn Ordinary Complaints into Thousands of Dollars*, between January 1963 and June 1977 amassed a total of \$80,710.46 (£42,480) ranging between \$6.95 and \$25,000 in refunds and compensations. A recent complaint was against this publication for failing to list his 51 consecutive profitable transactions in 'option trading'.

Cow chip tossing

The record distance for throwing a dried cow chip depends on whether or not the projectile may or may not be 'moulded into a spherical shape'. The greatest distance achieved under the 'non-sphericalization and 100% organic' rule (established in 1970) is 266 ft 81,07 m by Steve Urner at the Mountain Festival, Tehachapi, California, USA on 14 Aug 1981. These increasing distances are anxiously studied by party political campaign managers who are also 'heavily into' support of a rule which precludes the practice of mixing cement kiln dust into the cow feed prior to contests.

Crawling

The longest continuous voluntary crawl (progression with one or other knee in unbroken contact with the ground) on record is 26.5 miles 42,64 km by Rod Mahon and Ken Mackenzie of Newton Abbot, Devon on 18 Jan 1982.

Crochet

Mrs Barbara Jean Sonntag (b. 1938) of Craig, Colorado, USA crocheted 330 shells plus 5 stitches (equivalent to 4412 stitches) in 30 min at a rate of 147 stitches a minute on 13 Jan 1981. Mrs Sybille Anthony bettered all knitting marathons in a 120 hr crochet marathon at Toombul Shopping-town, Queensland, Australia on 3-7 Oct 1977.

Cucumber slicing

Norman Johnson of Blackpool College of Art and Technology set a record of 19.11 sec for slicing a 12 in cucumber 1½ in diameter at 22 slices to the inch (total 244 slices) at RAF Scampton, Lincolnshire on 30 May 1981.

Custard pie throwing

The most times champion in the annual World Custard Pie Championships at Coxheath, Kent (instituted 1968) have been the 'The Birds' ('The Bashers') and the 'Coxheath Men' ('Custard Kings') each with 3 wins. The target (face) must be 8 ft 3¾ in 2,53 m from the thrower who must throw a pie no more than 10¼ in 26,03 cm in diameter. Six points are scored for a square hit full in the face.

DANCING

Largest dance

The largest dance ever staged was that put on by the Houston

Livestock Show at the Astro Hall, Houston, Texas, USA on 8 Feb 1969. The attendance was more than 16,500 with 4000 turned away. A total of 18,520 dancers (2315 squares) took part in the 30th National Square Dance Convention in the Memorial Stadium, Seattle, Washington. The caller was Marv K.

Marathon dancing must be distinguished from dancing mania, which is a pathological condition. The worst outbreak of dancing mania was at Aachen, Germany, in July 1374, when hordes of men and women broke into a frenzied and compulsive choreomania in the streets which lasted for hours till injury or complete exhaustion ensued.

The most severe marathon dance staged as a public spectacle in the USA was one by Mike Ritof and the Edith Boudreaux who logged 5148 hr 28½ min to win \$2000 at Chicago's Merry Garden Ballroom, Belmont and Sheffield, Illinois USA from 29 Aug 1930 to 1 Apr 1931. Rest periods were progressively cut from 20 to 10 to 5 to nil minutes per hour with 10 inch steps and a maximum of 15 seconds for closure of eyes.

Ballet

In the *entrechat* (a vertical spring from the fifth position with the legs extended criss-crossing at the lower calf), the starting and finishing position each count as one such that in an *entrechat douze* there are five crossings and uncrossings. This was performed by Wayne Sleep for the BBC *Record Breakers* programme on 7 Jan 1973. He was in the air for 0.71 sec.

Ballet Most turns

The greatest number of spins called for in classical ballet choreography is the 32 *fouettés rond de jambe en tournant* in 'Swan Lake' by Pyotr Ilyich Chaykovskiy (Tchaikovsky) (1840-93). Miss Rowena Jackson (later Chatfield), MBE (b. Invercargill, NZ, 1925) achieved 121 such turns at her class in Melbourne, Victoria, Australia, in 1940.

Ballet Most curtain calls

The greatest recorded number of curtain calls ever received by ballet dancers is 89 by Dame Margaret Evelyn Arias, DBE *née* Hookham (born Reigate, Surrey, 18 May 1919), *alias* Margot Fonteyn, and Rudolf Hametovich Nureyev (born on a train near Irkutsk, USSR, 17 Mar 1938) after a performance of 'Swan Lake' at the Vienna Staatsoper, Austria, in October 1964.

Ballet Largest Cast

The largest number of ballet dancers used in a production in Britain has been 2000 in the London Coster Ballet of 1962, directed by Lillian Rowley, at the Royal Albert Hall, London.

Ballroom Marathon

The individual continuous world record for ballroom dancing is 120 hr 17 min 10 sec by Janab Fareed Nazeer on 27 Feb-4 Mar 1981 at the Open Air Theatre, Jaffna, Sri Lanka. Three girls worked shifts as his partner.

Ballroom Champions

The world's most successful professional ballroom dancing champions have been Bill Irvine, MBE and Bobbie Irvine, MBE, who won 13 world titles between 1960 and 1972.

The most consecutive national titles won is 10 in the New Zealand Old Time Championship by Mr Maurice Fox and his wife Royce (*née* Miles) of Palmerston North in 1959-68.

The oldest competitive ballroom dancer is Albert J. Sylvester CBE, JP (b. 24 Nov 1889) of Corsham, Wiltshire. In 1977 he won the topmost amateur Alex Moore award for a 10 dance test with his partner Paula Smith in Bath on 26 Apr 1977. By 1981 he had won nearly 50 medals and trophies since he began dancing in 1964.

Belly dancing

The longest recorded belly dance was one of 100 hr by Sabra Starr at Teplitzki's Hotel, Atlantic City, New Jersey, USA on 4-8 July 1977.

Charleston

The Charleston duration record is 110 hr 58 min by Sabra Starr of Lansdowne, Pennsylvania, USA on 15-20 Jan 1979.

Conga

The longest recorded conga was one comprising a 'snake' of 8128 people in Sidmouth, Devon on 25 Aug 1978.

Disco

The longest recorded disco dancing marathon is one of 347 hr by Babs Spear and Bridget Powe at Tempo, Queen Street, Barnstaple, Devon on 5-19 Apr 1981.

Flamenco

The fastest flamenco dancer ever measured is Solero de Jerez aged 17 who in Brisbane, Australia in September 1967 in an electrifying routine attained 16 heel taps per second or a rate of 1000 a minute.

High kicking

The world record for high kicks is 9100 in 6 hr 51 min by V. S. Kumar Anandan at Galle Face, Colombo, Sri Lanka on 31 Dec 1980-1 Jan 1981.

Jiving

The duration record for non-stop jiving is 97 hr 42 min by Richard Rimmer (with a relay of partners) of Caterham, Surrey on 11-16 Nov 1979. Under the strict rules of the European Rock n' Roll Association the duration record is 22 hr by Mirco and Manuela Catalano at the Olympia Shopping Centre, Munich on 6-7 Feb 1981.

Limbo

The lowest height for a bar (flaming) under which a limbo dancer has passed is 6¼ in 15.5 cm off the floor by Marlene Raymond, 15 at the Port of Spain Pavilion, Toronto, Canada on 24 June 1973. Strictly no part of the body other than the sole or side of the foot should touch the ground though the brushing of a shoulder blade does not in practice usually result in disqualification. Denise Culp, 8, went under a 5⅞ in 14.92 cm bar on roller skates at Rock Hill, South Carolina, USA on 25 July 1981.

Tap

The fastest rate ever measured for any tap dancer has been 1440 taps per min (24 per sec) by Roy Castle on the BBC TV *Record Breakers* programme on 14 Jan 1973.

The greatest ever assemblage of tap dancers in a single routine is 2218 choreographed by Betty Laine in aid of Action Research in a single routine for the BBC T.V. show 'Record Breakers' on 29 Nov 1981 at Eastney Royal Marine Barracks, Portsmouth, Hants., England.

Dance band

The most protracted session for a dance band is one of 321 hr (13 days 9 hr) by the Black Brothers of W. Germany at Bonn ending on 2 Feb 1968. Never less than a quartet were in action during the marathon.

Demolition work

Fifteen members of the International Budo Association (Japanese martial arts) led by Phil Milner (3rd Dan Karate), demolished a 6-roomed early Victorian house at Idle, Bradford, West Yorkshire by head, foot and empty hand in 6 hr on 4 June 1972. On completion they bowed to the rubble.

Domino toppling

The greatest number of dominoes (set up singlehanded) toppled is 169,713 by Michael Cairney, 23, at the Mid-Hudson Civic Center, Plaza, Poughkeepsie, New York on 9 June 1979 for the National Hemophilia Foundation. The dominoes stretching 4.3 miles 6.9 km fell at 2¼ mph 3.6 km/h having taken 13 days to set up.

The record for a team (maximum 4 people) is 255,389 falling in 53 min on 24 Aug 1980 at Hakone, Japan. The 2 team members, John Wickham and Erez Klein, spent 5 weeks setting up the dominoes.

Drumming

The world's duration drumming record is 738 hr by Boo Boo McAfee of Nashville, Tennessee USA on 13 July-13 Aug 1981.

Ducks and drakes

The best accepted ducks and drakes (stone-skipping) record is

HUMAN ACHIEVEMENTS

24 skips (10 plinkers and 14 pitty-pats) by Warren Klope, 20 of Troy, Michigan with a 4 in 10 cm thin flat limestone at the annual Mackinac Island, Michigan, USA stone skipping tournament on 5 July 1975. This was equalled by John S. Kolar of Birmingham, Michigan and Glenn Loy Jr of Flint, Michigan on 4 July 1977.

Egg dropping

The greatest height from which fresh eggs have been dropped (to earth) and remained intact is 198 m 650 ft by David S. Donoghue from a helicopter on 2 Oct 1979 over Tokyo Golf Course.

Egg Hunt

The greatest egg hunt on record involved 28,260 hard-boiled eggs hidden by The North Biloxi Jaycees in a meadow in Harrison County, Mississippi, USA for the 17th Annual Harry Fountain Memorial Easter Egg Hunt on 4 Apr 1982 by 3800 children aged 1 to 9.

Egg and spoon racing

Chris Riggio of San Francisco, California, USA completed a 28.5 mile 45.86 km fresh egg and dessert spoon marathon in 4 hr 34 min on 7 Oct 1979.

Egg shelling

Two kitchen hands, Harold Witcomb and Gerald Harding, shelled 1050 dozen eggs in a 7¼ hr shift at Bowyers, Trowbridge, Wiltshire on 23 Apr 1971. Both are blind.

Egg throwing

The longest recorded distance for throwing a fresh hen's egg without breaking is 350 ft 106.68 m on their 58th exchange between William Cole and Jonathan Heller in Central Park, New York, USA on 17 Mar 1979.

Escapology

The most renowned of all escape artists has been Ehrich Weiss alias Harry Houdini (1874–1926), who pioneered underwater escapes from locked, roped and weighted containers while handcuffed and shackled with irons.

One of the major manufacturers of strait-jackets acknowledges that an escapologist 'skilled in the art of bone and muscle manipulation' could escape from a standard jacket in seconds. The extreme acknowledged claim is 1.68 sec by Bill Shirk on 19 June 1979 at the Marion County Sheriff's Dept Training Center, Indianapolis, Indiana, USA. Records claimed for the highest escapes effected by strait-jacketed escapologists suspended upside-down from helicopters have been discontinued since the altitudes now far exceed the heights for attaining terminal velocity.

Family tree Longest

The farthest back the lineage of any family has been traced is that of K'ung Ch'iu or Confucius (551–479 BC). His 4 greats grandfather K'ung Chia is known from the eighth century BC. This man's 84th lineal descendant lives today in Taiwan (Formosa).

Fashion show longest

The longest fashion show ever recorded was one which lasted 48 hr on the Roseland catwalk, Sydney, Australia on 16–18 June 1977, compered by Patrick Bollen. Lyn Snowdon, Kay Hammond and Virginia Connor all completed 41.4 miles 66.6 km on the catwalk.

Faux pas

In measuring by financial consequence, the greatest *faux pas* on record was that of the young multi-millionaire, James Gordon Bennett, committed on 1 Jan 1877 at the family mansion of his demure fiancée one Caroline May, in Fifth Avenue, New York City. Bennett arrived in a two-horse cutter late and obviously in wine. By dint of intricate footwork, he gained the portals to enter the withdrawing room where he was the cynosure of all eyes. He mistook the fireplace for a plumbing fixture more usually reserved for another purpose. The May family broke the engagement and Bennett (1841–1918) was obliged to spend the rest of his foot-loose and fancy-free life based in Paris with the resultant non-collection of millions of tax dollars by the US Treasury.

Miscellaneous Endeavours

Feminine beauty

Female pulchritude being qualitative rather than quantitative does not lend itself to records. It has been suggested that, if the face of Helen of Troy (c. 1200 BC) was capable of launching 1000 ships, a unit of beauty sufficient to launch one ship should be a millihelen. The pioneer beauty contest was staged at Atlantic City, New Jersey, USA in 1921 and was won by a thin blue-eyed blonde with a 30 in 76.2 cm chest, Margaret Gorman. The Miss World contest began in London in July 1951. The maximum dimensions of any winner were those of Miss Egypt, Antigone Costanda, in 1954 whose junoesque characteristics were at 40–26–38 in 101–66–96 cm and thus in advance of the classic Western idea of allure. The United Kingdom is the only country to have produced four winners. They were Rosemarie Frankland (1961); Ann Sidney (1964); Lesley Langley (1965) and Helen Morgan (1974), who resigned. The maximum number of contestants was 68 in November 1975. The shortest reign was that of 18 hours by Miss Germany (Gabriella Brum) in 1980.

The tallest girl to win the Miss United Kingdom title has been Madelene Stringer (now Mrs Chandler), the 6 ft 1.82 m tall 1977 winner from Tyne and Wear.

The world's largest beauty pageant is the annual Miss Universe contest inaugurated in Long Beach California in 1952. The most successful country has been the USA with winners in 1954–56–60–67. The number of countries represented has reached 78 with Miss USA reigning in 1980.

Fire pumping

The greatest gallonage stirrup-pumped by a team of 8 in an 80 hr charity pump is 13,901 gal 63 192 litres by the White Watch team of the London Salvage Corps in Battersea Park on 2–5 May 1980.

Fire pump manhandling

The longest unaided tow of a fire appliance in excess of 10 cwt 508 kg in 24 hr on a closed circuit is 184.5 miles 296.9 km by a 32 man team at RNAS Culdrose, Cornwall with an 11.3 cwt 574 kg fire pump on 1–2 Aug 1981.

Flute marathon

The longest recorded marathon by a flautist is 48 hr by Joe Silmon in HMS *Grampus* in Gosport, Hampshire on 19–20 Feb 1977.

Frisbee throwing

A Frisbee is a concave plastic throwing plate. Competitive Frisbee throwing began in 1957. The International Frisbee Association indoor records are Men: 363.5 ft 110.8 m by Joseph Youngman; and Women: 229.6 ft 69.9 m by Suzanne Fields, both at Cedar Falls, Iowa on 26 Apr 1981. The outdoor records are: Men: 500 ft 152.4 m by Tetsuro Arita, 4 May 1980, Tokyo, Japan; and Women: 401.5 ft 122.3 m by Liz Reeves, 14 June 1980, Surrey, England. The throw, run and catch record is 271.2 ft 82.6 m by Tom Monroe on 24 Aug 1979 at Irvine, California. The group marathon record is 1001 hr by The Alhambra Frisbee disc club on 7 May–18 June 1978 at Alhambra, California.

Gladiatorial combat

Emperor Trajan of Rome (AD 98–117) staged a display involving 4941 pairs of gladiators over 117 days. Publius Ostorius, a freedman, survived 51 combats in Pompeii.

Gold panning

The fastest time recorded for 'panning' 8 planted gold nuggets in a 10 in 25.4 cm diameter pan is 13.4 sec by Dick Huber of Ahwahnee, California in the 20th World Gold Panning Championship at Tropico Gold Mine, Rosamond, California, on 2 Mar 1980. The female record is 15.27 sec by Mrs Carolyn Box also of Ahwahnee, California in the 1978 18th Championship on 4–5 Mar 1978.

Golf ball balancing

Lang Martin balanced 7 golf balls vertically without adhesive at Charlotte, North Carolina, USA on 9 Feb 1980.

Grape catching

The longest distance claimed for catching a thrown grape in the

mouth is 321 ft 5 in 97,96 m by Paul J. Tavilla. The grape was thrown off the roof of the 31 storey Plaza South building, Florida, USA on 16 May 1982.

Grave digging

It is recorded that Johann Heinrich Karl Thieme, sexton of Aldenburg, Germany, dug 23,311 graves during a 50-year career. In 1826 his understudy dug his grave.

Ground Breaking

The highest number of participants in a ground-breaking ceremony has been 5714 for the Owens-Illinois headquarters building at SeaGate, Toledo, Ohio, USA on 22 May 1979.

Guitar playing

The longest recorded solo guitar playing marathon is one of 230 hr by John D. Marshall of West Bridgford, Nottingham on 18–28 Feb 1981 at the Yorker Public House, Nottingham.

Gum boot throwing

The longest recorded distance (a Size 8 Challenger Dunlop Boot) for 'Wellie wanging' is 173 ft 52,73 m by Tony Rodgers of Warminster, Wilts on 9 Sept 1978. Rosemary Payne established the feminine record at Cannon Hill Park, Birmingham on 21 June 1975 with 129 ft 11 in 39,60 m.

Gun running

The record for the Royal Tournament Naval Field Gun competition (instituted 1907, with present rules since 1913) is 2 min 42.4 sec by the Portsmouth Field Gun crew at Earl's Court, Kensington & Chelsea, London on 31 July 1981. The barrel alone weighs 8 cwt 406 kg. The wall is 5 ft 1,52 m high and the chasm 28 ft 8,53 m across. The Portsmouth crew returned 2 min 40.7 sec in a training practice run at Whale Island, Portsmouth, Hampshire in 1972.

Haggis Hurling

The longest recorded distance for throwing a haggis (min. weight 1 lb 8 oz 680 g) is 163 ft 9½ in 49,92 m by Alan Pettigrew at the Ardrrossan Highland Games on 14 June 1981.

Hair-dressing

Pierre Ortiz cut, set and styled hair continuously for 342 hr on 10–26 May 1981 in his 'New York New York' salon, Huntingdon Beach, California, USA.

Hair splitting

The greatest reported achievement in hair splitting has been that of the former champion cyclist and craftsman Alfred West (b. London, 14 Apr 1901) who has succeeded in splitting a human hair 17 times into 18 parts on eight occasions. Examples of his work are exhibited in a number of Guinness Exhibit Halls and Museums.

Hammock Swinging

V. Paratore and B. Galvin maintained a hammock in constant swinging motion for 192 hours in San Francisco, California, USA in April 1979.

Handbell ringing

The longest recorded handbell ringing recital has been one of 50 hr by the Potomac English Handbell Ringers at Landover Shopping Mall, Maryland, USA, on 14–16 Feb 1981.

Handshaking

A world record for handshaking was set up by Theodore Roosevelt (1858–1919), President of the USA, when he shook hands with 8513 people at a New Year's Day, White House Presentation in Washington, DC, USA on 1 Jan 1907. Mayor Joseph Lazarow shook hands with 11,030 people on the Boardwalk, Atlantic City, New Jersey, USA in 11 hr 5 min on 3 July 1977. Outside public life the record has become meaningless because aspirants merely tend to arrange circular queues or wittingly or unwittingly shake the same hands repetitively.

Hand writing

The longest recorded hand written letter writing marathon is one of 505 hr and 3998 letters with their envelopes by Raymond L. Cantwell of Littlemore, Oxford, England in raising money for the Radcliffe Infirmary on 25 Aug–16 Sept 1978.

High diving

The highest regularly performed head first dives are those of professional divers from La Quebrada ('the break in the rocks') at Acapulco, Mexico, a height of 118 ft 36 m. The leader of the 27 divers in the exclusive Club de Clavadistas is Raul Garcia (b. 1928) with more than 35,000 dives. The base rocks, 21 ft 6,40 m out from the take-off, necessitate a leap of 27 ft 8,22 m out. The water is 12 ft 3,65 m deep. The highest witnessed in Britain is one of 108 ft 32,9 m into 8 ft 2,43 m of water at the Aqua show at Earl's Court, London on 22 Feb 1948 by Roy Fransen, 32.

On 8 May 1885, Sarah Ann Henley, aged 24, jumped from the Clifton Suspension Bridge, which crosses the Avon, England. Her 250 ft 76 m fall was slightly cushioned by her voluminous dress and petticoat acting as a parachute. She landed, bruised and bedraggled, in the mud on the north bank and was carried to hospital by four policemen. On 11 Feb 1968 Jeffrey Kramer, 24, leapt off the George Washington Bridge 250 ft 76 m above the Hudson River, New York City, NY and survived. Of the 696 (to 1 Jan 1980) identified people who have made 240 ft 73 m suicide dives from the Golden Gate Bridge, San Francisco, California, USA since 1937, twelve survived of whom Todd Sherratt, 17, was the only one who managed to swim ashore unaided.

Col Harry A. Froboess (Switzerland) jumped 110 m 360 ft into the Bodensee from the airship *Graf Hindenburg* on 22 June 1936.

The greatest height reported for a dive into a flaming tank is one of 100 ft 20,4 m into 7½ ft 2,28 m by Bill McGuire, 48 at the Holiday Inn, Chicago City Center, Michigan, USA on 14 Aug 1975. Kitty O'Neil dived 180 ft 54,8 m from a helicopter over Northridge, California on 9 Sept 1979 onto an air cushion measuring 30 × 60 ft 9,14 × 18,28 m for a TV film stunt.

Highest shallow dive

Henri La Mothe (b. 1904) set a record by diving 28 ft 8,53 m into 12½ in 31,43 cm of water in a child's paddling pool in Northridge, California, on 7 Apr 1979. He struck the water chest first at a speed of 28.4 mph 45,7 km/h.

High-wire act

The greatest height above street level of any high wire performance has been from a 140 ft 42,6 m wire between the 1350 ft 411 m twin towers of the World Trade Center, New York City by Philippe Petit, 24 of Nemours, France on 7 Aug 1974. He was charged with criminal trespass after a 75 min display of at least 7 crossings. The police psychiatrist opined 'Anyone who does this 110 storeys up can't be entirely right'.

Hitch-hiking

The title of world champion hitch-hiker is claimed by Devon Smith who from 1947 to 1971 thumbed lifts totalling 291,000 miles 468 300 km. In 1957 he covered all the then 48 US States in 33 days. It was not till his 6013th 'hitch' that he got a ride in a Rolls-Royce. The hitch-hiking record for the 874 miles 1406 km from Land's End, Cornwall, to John o'Groats, Highland, Scotland, is 17 hr 50 min by Andrew Markham of Brigg, S Humbs. on 3–4 Sept 1979. The time before the first 'hitch' on the first day is excluded. The fastest time recorded for the round trip is 45 hr 34 min by Guy Hobbs of Bradford-on-Avon, Wiltshire on 14–16 June 1978.

Hod carrying

Stan Mallion of Swanley, Kent carried bricks totalling 320 lb 145,1 kg up the minimum 12 foot 3,65 m ladder on 24 Jan 1982 at Dartford. Eric Stenman of Jakobstad, Finland carried 74 bricks of 4 kg 8.8 lb each so totalling 296 kg 652½ lb in a 4 kg 8.8 lb hod 5 metres 16.4 ft on the flat before ascending up a runged ramp to a height of 7 ft 2,13 m on 25 July 1939.

Hoop rolling

In 1968 it was reported that Zolilio Diaz (Spain) had rolled a hoop 600 miles 965 km from Mieres to Madrid and back in 18 days.

Hop scotch

The longest recorded hop scotch marathon is one of 90 hr by Steven Couch and Graham Clarke of Chelmsford Fire Station, Chelmsford, Essex on 4–8 May 1982.

Hot water bottle bursting

Contests involving the bursting of hot water bottles by sheer lung power is regarded as medically most inadvisable and the category has been discontinued. Substituted for this activity will be the inflation of standardized 1000 gramme meteorological balloons to a diameter of 8 feet 2.43 m against time. Mel Robson, 40 of Newcastle-upon-Tyne, England achieved a time of 1 hr 46 min on television in Tokyo, Japan on 11 Mar 1982.

House of cards

The greatest number of storeys achieved in building freestanding houses of standard playing cards is 61 in the case of a tower using 3650 cards to a height of 11 ft 7 in 3.53 m built by James Warnock at Cantley, Quebec, Canada, on 8 Sept 1978.

Hula hooping

The highest claim for sustaining gyrating hoops between shoulders and hips is 75 by Chico Johnson, 22 on 7 Apr 1982. Three complete gyrations are mandatory. The longest recorded marathon for a single hoop is 54 hr by Kym Coberly of Denton, Texas, USA on 7-9 Oct 1978.

Human cannonball

The record distance for firing a human from a cannon is 175 ft 53.3 m in the case of Emanuel Zacchini in the Ringling Bros and Barnum & Bailey Circus, Madison Square Gardens, New York City, USA, in 1940. His muzzle velocity has been estimated at 54 mph 86.9 km/h. On his retirement the management were fortunate in finding that his daughter Florinda was of the same calibre. An experiment on Yorkshire TV on 17 Aug 1978 showed that when Miss Sue Evans, 17 was fired she was 3/8 in 9.5 mm shorter on landing.

In the Halifax explosion of 6 Dec 1917 (p. 238) A. B. William Becker, AM (d. 1969) was blown some 1600 yd 1.46 km but was found breathing in a tree.

Human Chain

An estimated 17,000 people linked hands in the 'Hands Around The Wrekin', a 1335 ft 407 m hill in Shropshire, England on 4 May 1981. The estimated length of the chain was 5892 m 3.66 miles. Another chain claimed also to be of 17,000 was formed on the frozen Rideau Canal, Ottawa, Canada at the Winterlude in February 1982 and measured 7.7 km 4.78 miles.

Human fly

The longest climb achieved on the vertical face of a building occurred on 25 May 1981 when Daniel Goodwin, 25, scaled the outside of the 1454 ft 443 m Sears Tower, Chicago in 7 hr 25 min at the rate of 3.2 ft/min 99 cm/min. The name of the masked 'human fly', who has ridden at 380 km/h 240 mph atop a DC-8 jetliner in April 1977 has not been disclosed. It is however believed unlikely that he is a member of the jet set. Lead climber Jean-Claude Droyer (b. 8 May 1946) of Paris and Pierre Puisseux (b. 2 Dec 1953) of Pau, France climbed up the outside of the Eiffel Tower to a height of 300 m 984 ft with no dynamic mechanical assistance on 21 July 1980. Jean-Claude took 2 hr 18 min 15 sec to complete the climb.

James Whale demonstrates the power of radio when, in a working day of eight hours, he kissed 4049 different girls. The invigilators were both County Councillors. (Duncan Davis)



Jaromir Wagner (b. Czechoslovakia 1941) became the first man to fly the Atlantic standing on the wing of an aircraft. He took off from Aberdeen, Scotland on 28 Sept 1980.

Joke cracking

Dave Van Der Merwe cracked jokes unrelentingly for 27 hr 37 min at the Sanlam Centre, Pretoria, Transvaal, South Africa on 27-28 Nov 1981. The duration record for a duo is 52 hr by Wayne Malton and Mike Hamilton at the Howard Johnson Motor Hotel, Toronto airport, Ontario, Canada on 13-16 Nov 1975.

Jumble Sale

Britain's largest Jumble Sale was 'Jumbly '79' sponsored by *Woman's Own* at Alexandra Palace, London on 5-7 May 1979 in aid of Save The Children Fund. The attendance was 60,000 and the gross takings in excess of £60,000. The Winnetka Congregational Church, Illinois, USA raised \$114,479.52 (then £57,240) in their 49th one-day rummage sale on 14 May 1981.

Karate Chop

Karatekas have been measured to exert a force of 3000 newtons 675 lb f and can develop a downward chopping speed of 14.4 m/sec 32.2 mph.

Claims for breaking bricks and wooden slats etc. are unsatisfactory because of the lack of any agreed standards upon which comparisons can be made of friability and the spacing of fulcrums.

Kiss of life

Five members of the St John Ambulance Clifton Combined Division, York, N Yorkshire maintained a 'Kiss of Life' for 240 hr with 224,029 inflations on 26 July-5 Aug 1981. The 'patient' was a dummy.

Kissing

The most prolonged osculatory marathon in cinematic history is one of 185 sec by Regis Toomey and Jane Wyman in *You're In the Army Now* released in 1940. In the Valentine's Day 'Big Kiss Off' for charity Debbie Luray and Jim Schuyler kissed for 5 days 12 hr at the Ocean Mall, Singer Island, Florida, USA on 14-19 Feb 1980. James Whale, 27, of Metro Radio, Newcastle-upon-Tyne kissed 4049 girls in 8 hr in Tyneside on 22 Sept 1978—a rate of one per 7.11 sec.

Underwater

The most protracted kiss underwater was one of 2 min 18 sec by Toshiaki Shirai and Yukiko Nagata on Channel 8, Fuji TV in Tokyo, Japan on 2 Apr 1980.

Kite flying Largest

The largest kite ever flown was Gerard van der Loo's 230 kg 507 lb nylon kite measuring 16.30 × 32 × 35.38 m 53.4 × 105 × 116 ft and 553 m² 19,528 ft². It was launched by a team of 70 at Scheveningen, Netherlands on 8 Aug 1981 and flew above 40 m 131 ft for 37 minutes.

Kite flying Greatest number

The most kites flown on a single line is 4128 by Kazuhiko Asaba, 55 at Kamakura, Japan on 21 Sept 1978.

Kite flying Altitude

A claim for 37,908 ft 11 554 m (by triangulation) by Steven W. Flack over Boonville, New York on 9 Sept 1978 is not unreservedly accepted by *Kitelines* magazine of Baltimore, Maryland, USA. The kite was not recovered. The classic record is 9470 m 31,955 ft by a chain of 8 kites over Lindenberg, East Germany on 1 Aug 1919.

Kite flying Duration

The longest recorded flight is one of 169 hr by the Sunrise Inn team, Fort Lauderdale, Florida managed by Will Yolen on 30 Apr-7 May 1977.

Knitting

The world's most prolific hand-knitter of all time has been Mrs Gwen Matthewman of Featherstone, West Yorkshire. She had



The St John Ambulance 'kiss of life' marathon team who stayed in action for ten solid days (see p. 188).

attained a speed of 111 stitches per min in a test at Phildar's Wool Shop, Central Street, Leeds on 29 Sept 1980. Her technique has been filmed by the world's only Professor of Knitting—a Japanese.

Knot-tying

The fastest recorded time for tying the six Boy Scout Handbook Knots (square knot, sheet bend, sheep shank, clove hitch, round turn and two half hitches and bowline) on individual ropes is 8.1 sec by Clinton R. Bailey Sr, 52, of Pacific City, Oregon, on 13 Apr 1977.

Leap frogging

Fourteen members of the Phi Gamma Delta Club at the University of Washington, Seattle, USA, covered 602 miles 968.8 km in 126 hr 46 min on 20–25 Mar 1981.

Life saving

In November 1974 the City of Galveston, Texas and the Noon Optimist Club unveiled a plaque to the deaf-mute lifeguard Leroy Colombo (1905–74) who saved 907 people from drowning in the waters around Galveston Island from 1917 to his death.

Lightning most times struck

The only living man in the world to be struck by lightning 7 times is ex-Park Ranger Roy C. Sullivan (US), the human lightning conductor of Virginia. His attraction for lightning began in 1942 (lost big toe nail), and was resumed in July 1969 (lost eyebrows), in July 1970 (left shoulder seared), on 16 Apr 1972 (hair set on fire), on 7 Aug 1973 (new hair refired and legs seared), on 5 June 1976 ankle injured, and sent to Waynesboro Hospital with chest and stomach burns on 25 June 1977 after being struck while fishing.

Lion-taming

The greatest number of lions mastered and fed in a cage by an unaided lion-tamer was 40, by 'Captain' Alfred Schneider in 1925. Clyde Raymond Beatty handled more than 40 'cats' (mixed lions and tigers) simultaneously. Beatty (b. Bainbridge, Ohio, 10 June 1903, d. Ventura, California, 19 July 1965) was the featured attraction at every show he appeared with for more

than 40 years. He insisted upon being called a lion-trainer. More than 20 lion-tamers have died of injuries since 1900.

Log rolling

The record number of International Championships is 10 by Jubiel Wickheim (of Shawnigan Lake, British Columbia, Canada) between 1956 and 1969. At Albany, Oregon on 4 July 1956 Wickheim rolled on a 14 in. 35.5 cm log against Chuck Harris of Kelso, Washington USA for 2 hr 40 min before losing.

Merry go round

The longest merry go round marathon on record is one of 312 hr 43 min by Gary Mandau, Chris Lyons and Dana Dover in Portland, Oregon, USA on 20 Aug–2 Sept 1976.

Message in a bottle

The longest recorded interval between drop and pick-up is 64 years between 7 Aug 1910 ('please write to Miss Gladys Potter') in Grand Lake and August 1974 from Lake Huron. Miss Potter was traced as Mrs Oliver Scheid, 76 of Columbus, Ohio. A bottle apparently bearing a message written on 19 Nov 1899 by Capt Charles Weierishen of the SS *Crown Princess Cecilia* off Varberg, Sweden was reportedly picked up on the coast of Victoria, BC Canada on 9 Dec 1936.

Milk bottle balancing

The greatest distance walked by a person continuously balancing a full pint milk bottle on the head is 18 miles 880 yd 29.7 km by Willie Hollingsworth of Freeport, New York, USA on 24 Mar 1979.

Model Highest Paid

The largest reported contract in the history of modelling is \$1,500,000 (now £652,000) for 5 years' rights to the face, eyes and lips of Cheryl Tiegs of the California look paid by the cosmetic group Noxell in December 1979. *Fortune Magazine* says that her legs are still 'up for grabs'. Though God makes models he makes very few.

Morse

The highest recorded speed at which anyone has received morse code is 75.2 words per minute—over 17 symbols per second. This was achieved by Ted R. McElroy of the United States in a tournament at Asheville, North Carolina, USA on 2 July 1939. The highest speed recorded for hand key transmitting is 175 symbols a minute by Harry A. Turner of the US Army Signal Corps at Camp Crowder, Missouri on 9 Nov 1942.



Mr Pi demonstrating his unique ability to make 1024 (2^{10}) noodle strings each over 5 ft 1,52 m in 60.0 sec.

Musical chairs

The largest game on record was one starting with 4514 participants and ending with Scott Ritter, 18, on the last chair at Ohio State University, Ohio, USA on 25 Apr 1982.

Needle threading

The record number of times a strand of cotton can be threaded through a number 13 needle (eye $\frac{1}{2}$ in, by $\frac{1}{16}$ in, 12,7 mm $\times$ 1,6 mm) in 2 hr is 3795 by Miss Brenda Robinson of the College of Further Education, Chippenham, Wiltshire on 20 Mar 1971.

Noodle making

Mark Pi of the China Gate Restaurant, Toledo, Ohio, USA made 1024 noodle strings (over 5 ft 1,52 m) in 60 sec on WDHO-TV on 4 Mar 1981.

Omelette making

The greatest number of two-egg omelettes made in 30 min is 217 by Howard Helmer of New York City, USA, at Disneyland, Anaheim, California on 14 July 1978.

Onion peeling

The record for peeling 50 lb 22,67 kg of onions is 3 min 18 sec by Alain St. John in Plainfield, Conn., USA, on 6 July 1980.

Under revised rules stipulating a minimum of 50 onions, Alfonso Salvo of York, Pennsylvania, USA peeled 50 lb 22,67 kg of onions (52 onions) in 5 min 23 sec on 28 Oct 1980.

Organ

The longest recorded electric organ marathon is one of 411 hr by Vince Bull at the Comet Hotel, Scunthorpe, South Humberside on 2-19 June 1977. The longest church organ recital ever sustained has been 92 hr by Robert A. Hawkins of New Longton, Preston, Lancs on 15-19 June 1981.

Paddle Boating

The longest recorded voyage in a paddle boat is 2226 miles 3582 km in 103 days by the foot power of Mick Sigris and Brad Rud down the Mississippi from the headwaters in Minnesota to the Gulf of Mexico on 4 Aug-11 Nov 1979.

Parachuting Longest fall without

The greatest altitude from which anyone has bailed out without a parachute and survived is 6700 m 21,980 ft. This occurred in January 1942, when Lt (now Lt-Col) I. M. Chisov (USSR) fell from an Ilyushin 4 which had been severely damaged. He struck the ground a glancing blow on the edge of a snow-covered ravine and slid to the bottom. He suffered a fractured pelvis and severe spinal damage. It is estimated that the human body reaches 99 per cent of its low level terminal velocity after falling 1880 ft 573 m which takes 13-14 sec. This is 117-125 mph 188-201 km/h at normal atmospheric pressure in a random posture, but up to 185 mph 298 km/h in a head down position.

Vesna Vulovic, 23, a Jugoslavenski Aerotransport hostess, survived when her DC-9 blew up at 33,330 ft 10 160 m over the Czechoslovak village of Serbska Kamenice on 26 Jan 1972. She

was in hospital for 16 months after emerging from a 27 day coma and having many bones broken. She is now Mrs Breka.

The British record is 18,000 ft 5485 m by Flt-Sgt Nicholas Stephen Alkemade, aged 21, who jumped from a blazing *Lancaster* bomber over Germany on 23 Mar 1944. His headless fall was broken by a fir tree near Oberkürchen and he landed without a broken bone in a snow bank 18 in 45 cm deep.

Piano-playing

The longest piano-playing marathon has been one of 1172 hr 27 min (48 days 20 hr 27 min) playing 22 hr every day (with 5 min intervals each playing hour) from 6 Jan to 24 Feb 1970 by Roger Lavern at the Osborne Tavern, London.

The women's world record in the discontinued non-stop category was 133 hr (5 days 13 hr) by the 20 stone 127 kg Marie Ashton aged 40, now of Bradford, in a theatre in Black Northumberland, on 18-23 Aug 1958. Her last piece was 'Five minutes more'.

Piano smashing

The record time for demolishing an upright piano and passing the entire wreckage through a circle 9 in 22,8 cm in diameter is 1 min 37 sec by six members of the Tinwald Rugby Football Club, Ashburton, New Zealand led by David Young on 6 Nov 1977. Messrs Anthony Fukes, Mike Newman and Terry Gillington smashed a piano with bare hands and feet in 2 min 53 sec in Nottingham on 25 Aug 1979. (All wreckage was passed through the circle.)

Piano tuning

The record time for pitch raising (one semi-tone or 100 cents) and then returning a piano to a musically acceptable quality is 4 min 20 sec by Steve Fairchild at the Piano Technicians Guild contest at the Dante Piano Co factory, NY, USA on 5 Feb 1980.

Pillar box standing

The record number of people to pile on top of a pillar box (top of 6 ft² 0,55 m²) is 29, all students of the City of London College, Moorgate, in Finsbury Circus, City of London on 21 Oct 1971.

Pipe smoking

The duration record for keeping a pipe (3,3 g 0.1 oz of tobacco) continuously alight with only an initial match under IAPSC (International Association of Pipe Smokers Clubs) rules is 126 min 39 sec by the four-time champion William Vargo of Swanton Creek, Michigan at the 27th World Championships in 1975. The only 5-time champion is Paul T. Spaniola (USA) (1951-66-70-73-77). Longer durations have been recorded in less rigorous invigilated contests in which the foul practices of 'tamping' and 'gardening' are not unknown.

Four times world champion William Vargo seen in leisurely action. He set the record at 2 hours 6 minutes—see above.



Parachuting Records

Category	Name		Place	Date	
First from Tower	Louis-Sébastien Lenormand (1757–1839)	quasi-parachute	Montpellier France		1783
First from Balloon	André-Jacques Garnerin (1769–1823)	2230 ft 680 m	Monceau Park, Paris	22 Oct	1797
Earliest Mid-air Rescue	Miss Dolly Shepard brought down Miss Louie May on her single 'chute	from balloon at 11,000 ft	Longton, Staffordshire	9 June	1908
First from Aircraft (man)	'Captain' Albert Berry	3350 m	St. Louis, Missouri	1 Mar	1912
(woman)	Mrs Georgina 'Tiny' Broadwick (b. 1893)	Aerial exhibitionist	Griffith Park, Los Angeles	21 June	1913
First Free Fall	Mrs Georgina 'Tiny' Broadwick	Pilot Glenn L. Martin	North Island, San Diego, California	13 Sept	1914
Lowest Escape	S/Ldr Terence Spencer, DFC, RAF	30–40 ft 9–12 m	Wismar Bay, Baltic	19 April	1945
Longest Duration Fall	Lt Col Wm H. Rankin USMC	40 min due to thermals	North Carolina	26 July	1956
Highest Escape	Flt Lt J. de Salis and Fg Off P. Lowe, RAF	56,000 ft 17 068 m	Monyash, Derby	9 April	1958
Longest Delayed Drop (man)	Capt Joseph W. Kittinger ¹	84,700 ft 16.04 miles 25 816 m	Tularosa, New Mexico	16 Aug	1960
(woman)	O. Kommissarova (USSR)	from balloon at 102,800 ft 31 333 m	over USSR	21 Sept	1965
(civilian, over UK)	Peter J. Prior (GB)	14 100 m 46,250 ft	Fox Covert, Salisbury, Wilts	16 May	1981
(civilian, world)	R. W. K. Beckett (GB) Harry Ferguson (GB)	23,800 ft 7254 m from 26,000 ft	D. F. Malan Airport, Capetown	23 Nov	1969
Most Southerly	T/Sgt Richard J. Patton (d. 1973)	30,000 ft 9144 m from 32 000 ft			
Most Northerly	Dr Jack Wheeler (US); pilot Capt. Rocky Parsons	9753 m	South Pole	25 Nov	1956
Cross Channel (Lateral fall)	Sgt. Bob Walters with 3 soldiers and 2 Royal Marines	Operation Deep Freeze –25° F (–31.6° C)	In Lat. 90° 00' N	15 Apr	1981
Career Total (man)	Yuri Baranov and Anatoly Osipov (USSR)	22 miles 35.4 km from 25,000 ft 7600 m	Dover to Sangatte, France	31 Aug	1980
(woman)	Valentina Zakoretskaya (USSR)	10,000	over USSR	to Sept	1980
Highest Landing	Ten USSR parachutists ²	8000	over USSR	1964–Sept	1980
Heaviest Load	US Space Shuttle Columbia external rocket retrieval	23,405 ft 7133 m	Lenina Peak	May	1969
Highest from Bridge	Donald R. Boyles	80 ton capacity, triple array, each 120 ft 36.5 m diameter	Atlantic off Cape Canaveral, Florida	12 Apr	1981
Highest Tower Jump	Herbert Leo Schmidt (US)	1053 ft 320 m	Royal Gorge, Colorado	7 Sept	1970
Biggest Star (5 sec hold)	60 man team	KTUL-TV Mast 1984 ft 604 m	Tulsa, Oklahoma	4 Oct	1970
Highest column	8 man Enquirer Team (Knowsense)	Formation held 5 sec (FAI rules)	Zephyrhills, Florida	18 Apr	1981
Most travelled	Kevin Seaman from a Cessna Skylane (pilot Charles E. Merritt)	170 ft 52 m	Livermore, California, USA	23 Oct	1977
Oldest Man	Edwin C. Townsend	12,186 miles 19 611 km	Jumps in all 50 US States	26 July–15 Oct	1972
Woman	Mrs. Ardath Evitt (US)	85 years 1 day	Riverview, Florida, USA	6 Feb	1982
24 Hr Total	D. Bruce MacLaughlin (US)	74 years 6 months	Mooreville, Indiana, USA	6 Aug	1978
		235 (120 at night)	East Taunton, Mass, USA	17–18 Sept	1981

¹ Maximum speed in rarefied air was 625.2 mph 1006 km/h. at 90,000 ft 27,430 m – marginally supersonic.

² Four were killed.

Plate spinning

The greatest number of plates spun simultaneously is 72 by Shukuni Sasaki of Takamatsu, Japan at Nio Town Taiyo Exhibition, Kagawa, on 16 July 1981. The British record is 54 set by Holley Gray set during *BBC Record Breakers* on 6 May 1980.

Pogo stick jumping

The greatest number of jumps achieved is 120,715 by Jeff Kane in 16 hr 12 min at Oaklawn, Illinois USA, on 9–10 June 1980.

Pole-squatting

Modern records do not, in fact, compare with that of St Simeon the Younger, (c. 521–597 AD) called Stylites (Greek, *stylos* = pillar) a monk who spent his last 45 years up a stone pillar on The Hill of Wonders, near Antioch, Syria. This is probably the earliest example of record setting.

There being no international rules, the 'standards of living' atop poles vary widely. The record squat is 399 days by Frank Perkins from 1 June 1975–4 July 1976 in 8 × 8 ft 2.43 × 2.43 m box atop a 50 ft 15.24 m telegraph pole in San Jose, California, USA.

The British record is 32 days 14 hr by John Stokes, aged 32, of Moseley, West Midlands in a barrel on a 45 ft 13.70 m pole in Birmingham, ending on 27 June 1966. This is claimed as a world record for a barrel.

Pop group

The duration record for a 4-man pop-playing group is 144 hr by 'Rocking Ricky and the Velvet Collars' at The Talardy Hotel, St Asaph, Clwyd, N. Wales on 12–18 Nov 1976.

Potato peeling

The greatest amount of potatoes peeled by 5 people to an institutional cookery standard with standard kitchen knives in 45 min is 266.5 kg 587 lb 8 oz by J. Mills, M. McDonald, P. Jennings, E. Gardiner and V. McNulty at Bourke Street Hall, Melbourne, Vic, Australia on 17 Mar 1981.

Pram pushing

The greatest distance covered in pushing a pram in 24 hr is 345.25 miles 555.62 km by Runner's Factory of Los Gatos, California, USA with an All-Star team of 57 California runners on

23–24 June 1979. A team of 10 students from Sir Joseph Banks and East Hills High Schools, Chipping Norton, NSW, Australia, with an adult 'Baby', covered 388,408 km 241,34 miles in 24 hr on 16–17 Nov 1979.

'Psychiatrist' fastest

The world's fastest 'psychiatrist' was Dr Albert L. Weiner of Erlton, New Jersey, USA, who was trained solely in osteopathy but who dealt with up to 50 psychiatric patients a day in four treatment rooms. He relied heavily on narcoanalysis, muscle relaxants and electro-shock treatments. In December 1961 he was found guilty on 12 counts of manslaughter from using unsterilized needles.

Quoit throwing

The world's record for rope quoit throwing is an unbroken sequence of 4002 pegs by Bill Irby, Snr of Australia in 1968.

Ramp jumping

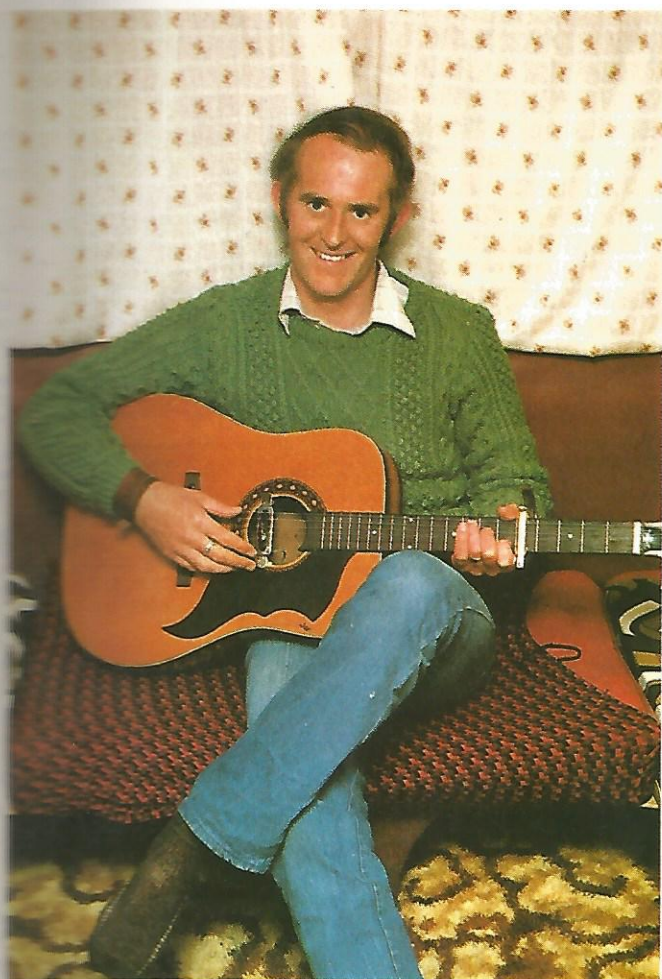
The longest distance ever achieved for motor cycle long jumping is 64.60 m 212 ft by Alain Jean Prieur (b. 4 July 1939) of France at Monthéry near Paris over 16 buses on 6 Feb 1977. The pioneer of this form of exhibition—Evel Knievel (b. Robert Craig Knievel, 17 Oct 1938 at Butte, Montana, USA) had suffered 433 bone fractures by his 1975 season. His abortive attempt to cross the 1600 ft 485 m wide and 600 ft 180 m deep Snake River Canyon, Idaho on 8 Sept 1974 in a rocket reputedly increased his life-time earnings by \$6 million (then £2½ million). The longest jump achieved in Britain is 190 ft 57.9 m by Eddie Kidd at Radlett Airfield, Hertfordshire on 4 Apr 1978.

Riding in armour

The longest recorded ride in full armour (8 stone 50.8 kg) is one of 167 miles 268.7 km from Edinburgh to Dumfries in 3 days (riding time 28 hr 30 min) by Dick Brown, 48, on 13–15 June 1979.

Riveting

The world's record for riveting is 11,209 in 9 hr by J. Moir at the Workman Clark Ltd shipyard, Belfast, Northern Ireland, in June 1918. His peak hour was his seventh with 1409, an average of nearly 23½ per min.



Pat Power, the Irishman with the iron larynx, who set the solo singing marathon record at 3 hours longer than a whole week.

Rocking chair

The longest recorded duration of a 'Rockathon' is 432 hr by Mrs Maureen Weston of Petreburgh Athletics Club, Peterborough, Cambridge on 14 Apr-2 May 1977.

Rolling pin

The record distance for a woman to throw a 2 lb 907 g rolling pin is 175 ft 5 in 53.4 m by Lori La Deane Adams, 21 at Iowa State Fair on 21 Aug 1979.

Scout riding

The greatest distance covered by a team of 25 in 24 hr is 336.11 miles 540.93 km by Wimmera Young Farmers, Victoria, Australia on 22-23 Mar 1980.

Search Longest

Walter Edwin Percy Zillwood (b. Deptford, London SE8, Dec 1900) traced his missing sister Lena (Mrs Elizabeth Eleanor Allen, b. Nov 1897, d. Jan 1982) after 79 years through the agency of the Salvation Army on 3 May 1980.

See-saw

George Partridge and Tamara Marquez of Auburn High School, Washington, USA on a suspension see-saw completed 1101 hr 40 min (indoor) on 28 Mar-13 May 1977. Georgia Chaffin and Tammy Adams of Goodhope Jr. High School, Cullman Alabama, USA completed 730 hr 30 min (outdoor) on 25 June-25 July 1975.

Monks

The longest sermon on record was delivered by the Rev Donald Thomas of Brooklyn, New York, USA on 18-22 Sept 1978 for 95 hr. From 31 May to 10 June 1969 the 14th Dalai Lama (b. 6 July 1934 as Tenzin Gyatso) the exiled ruler of Tibet, completed

a sermon on Tantric Buddhism for 5-7 hr per day to total 60 hr in India.

Shaving

The fastest demon barber on record is Gerry Harley, who shaved 845 men in 60 min with a safety razor at the Army and Navy Pub, Gillingham, Kent on 16 Sept 1981 taking a perfunctory 4¼ sec per volunteer.

Sheaf tossing

The world's best performance for tossing a 3.63 kg 8 lb sheaf for height is 19.77 m 64.86 ft by Trond Uilleberg of Skolleborg, Norway on 11 Nov 1978. Such pitchfork contests date from 1914.

Shoeshine boys

In this category (limited to a team of 4 teenagers; duration of 8 hr; shoes 'on the hoof') the record is 6780 pairs by the Sheffield Citadel Band of Salvation Army on 27 Feb 1982.

Shorthand fastest

The highest recorded speeds ever attained under championship conditions are: 300 words per min (99.64 per cent accuracy) for 5 min and 350 wpm (99.72 per cent accuracy, that is, two insignificant errors) for 2 min by Nathan Behrin (USA) in tests in New York in December 1922. Behrin (b. 1887) used the Pitman system invented in 1837. Morris I. Kligman, official court reporter of the US Court House, New York has taken 50,000 words in 5 hr (a sustained rate of 166.6 wpm). Rates are much dependent upon the nature, complexity and syllabic density of the material. Mr G. W. Bunbury of Dublin, Ireland held the unique distinction of writing at 250 wpm for 10 min on 23 Jan 1894.

Mr Arnold Bradley achieved a speed of 309 words per minute without error using the Sloan-Duployan system with 1545 words in 5 minutes in a test in Walsall, West Midlands on 9 Nov 1920.

Shouting

The greatest number of wins in the national town criers' contest is 11 by Ben Johnson of Fowey, Cornwall, who won in 1939, 1949-55, 1966, 1969 and 1973. The first national feminine champion has been Mrs Henrietta Sargent, town-crier, of The Three Horse Shoes, Cricklade, Wiltshire in 1980. On being told she had beaten the other 31 contestants she said 'I'm speechless'. (See also Longest-ranged voice, Chapter I page 22.)

Showering

The most prolonged continuous shower bath on record is one of 336 hr by Arron Marshall of Rockingham Park, Western Australia on 29 July-12 Aug 1978. The feminine record is 121 hr 1 min by Lisa D'Amato on 5-10 Nov 1981 at Harper College, Binghamton, New York, USA. Desquamation can be a positive danger.

Singing

The longest recorded solo singing marathon is one of 171 hr 15 min by Pat Power at the Blue Anchor Lounge, Bellurgan, Co Louth, Ireland on 24 July-1 Aug 1981. The marathon record for a choir has been 72 hr 2 min by the combined choir of Girl's High School and Prince Edward School, Salisbury, Zimbabwe on 7-10 Sept 1979. Acharya Prem Bhikuji started chanting the Akhand Ram Dhum in 1964 and devotees took this up in rotation completing their devotions 13 years later on 31 July 1977 at Jamnagar, India.

Skate boarding

'World' championships have been staged intermittently since 1966. Mike Kinney won a marathon contest at Reseda, California on 26 May 1979 with 217.3 miles 349.7 km in 30 hr 35 min.

The highest speed recorded on a skate board under USSA rules is 71.79 mph 115.53 km/h on a course at Mt Baldy, California in a prone position by Richard K. Brown, 33, on 17 June 1979. The stand-up record is 53.45 mph 86.01 km/h by John Hutson, 23 at Signal Hill, Long Beach, California on 11 June 1978. The high jump record is 5 ft 4 in 1.625 m by Trevor Baxter (b. 1 Oct 1962) of Burgess Hill, Sussex at Farnborough, Hants on 26 July 1981. At the 4th US Skateboard Association championship, at Signal Hill on 25 Sept 1977, Tony Alva, 19, jumped 17 barrels (17 ft 5.18 m).

Skipping

The longest recorded non-stop skipping marathon was one of 12 hr 8 min by Frank P. Oliveri (est. 120,744 turns) at Great Lakes Training Center, North Chicago, Illinois, USA on 13 June 1981.

Other records made without a break:

Most quintuple turns	5 by Katsumi Suzuki, Saitama, Japan, 29 May 1975
Most turns in 1 min	330 by Brian D. Christensen, Ridgewood Shopping Center, Tennessee, 1 Sept 1979
Most turns in 10 sec	108 by Albert Rayner, Wakefield, W. Yorks, 28 June 1978
Most doubles (with cross)	691 by Frank P. Oliveri at Henrietta, NY, USA, 6 Nov 1980
Double turns	10 133 by Katsumi Suzuki, Saitama, Japan 27 Sept 1979
Treble turns	381 by Katsumi Suzuki, Saitama, Japan 29 May 1975
Quadruple turns	51 by Katsumi Suzuki, Saitama, Japan, 29 May 1975
Duration	1264 miles 2034 km by Tom Morris, Brisbane-Cairns, Queensland, 1963
Most on single rope (32 turns)	88 (50 m rope) Todoroki Ground, Kanagawa, Japan, 24 Oct 1980
On a tightrope	55 (consecutive) by Bryan Andrew (né Dewhurst) BBC TV Centre, London 5 May 1980

Slinging

The greatest distance recorded for a sling-shot is 1434 ft 2 in 437,13 m using a 51 in 129,5 cm long sling and a 2 oz 56,5 g stone by Lawrence L. Bray at Loa, Utah, USA on 21 Aug 1981.

Smoke ring blowing

The highest recorded number of smoke rings formed from the lips from a single pull of a cigarette (cheek-tapping is disallowed) is 355 by Jan van Deurs Formann of Copenhagen achieved in Switzerland in August 1979.

Snakes and Ladders

The longest recorded game of Snakes and Ladders has been one of 260 hr by a team of six (four always in play) from Essex Young Farmers Club, West Mersea, Essex, on 29 Jan to 9 Feb 1982.

Snow shoeing

The fastest officially recorded time for covering a mile 1609,34 m is 6 min 23.8 sec by Richard Lemay (Frontenac Club, Quebec, Canada) at Manchester, New Hampshire, USA in 1973.

Spinning

The duration record for spinning a clock balance wheel by hand is 5 min 26.8 sec by Philip Ashley, aged 16, of Leigh, Greater Manchester on 20 May 1968.

Spitting

The greatest distance achieved at the annual tobacco spitting classic (instituted 1955) at Raleigh, Mississippi is 33 ft 7½ in 10,24 m by Jeff Barker on 25 July 1981. (In 1980 he reached 45 ft 13,71 m at Fulton, Miss.). In the 3rd International Spittin', Belchin' and Cussin' Triathlon, Harold Fielden reached 34 ft 0¼ in 10,36 m at Central City, Colorado USA on 13 July 1973. Distance is dependent on the quality of salivation, absence of cross wind, two finger pucker and the coordination of the back arch and neck snap. Sprays or wads smaller than a dime are not measured. Randy Ober of Bentonville, Arkansas, USA spat a tobacco wad 44 ft 6 in 13,56 m at the Calico 3rd Annual Tobacco Chewing and Spitting Championships north of Barstow, California, USA on 30 Mar 1980. The record for projecting a melon seed under WCWSSCA rules is 65 ft 4 in 19,91 m by John Wilkinson in Luling, Texas on 28 June 1980. The furthest reported distance for a cherry stone is 65 ft 2 in 19,86 m by Rick Krause, at Eau Claire, Michigan, USA on 5 July 1980. Spitters who care about their image wear 12 in 30,4 cm block-ended boots so practice spits can be measured without a tape.

Stair climbing

The 100 storey record for stair climbing was set by Dennis W. Martz in the Detroit Plaza Hotel, Detroit, Michigan, USA, on 26 June 1978 at 11 min 23.8 sec. Richard Black, 44, President of the Maremont Corporation ran a vertical mile on the stairs of Lake Point Tower, Chicago on 13 July 1978 in continuous action with 1 hr 25 min 6 sec ascent time and 44 min 39 sec descent time. *These records can only be attempted in buildings with a minimum of 70 storeys.*

The record for the 1760 steps in the world's tallest free-standing



Pete Squires just finishing the fastest ever ascent of the 1575 steps of the Empire State Building, New York City in 10 min 59 sec. (Jerry Soalt)

structure, Toronto's CN Tower, is 10 min 16 sec by Michael Round.

Pete Squires raced up the 1575 steps of the Empire State Building, New York City on 12 Feb 1981 in 10 min 59 sec.

In the line of duty Bill Stevenson has mounted 334 of the 364 steps of the tower in the Houses of Parliament, 3756 times in 14 years (1968-82)—equivalent to 23.39 ascents of Everest.

Standing

The longest period on record that anyone has continuously stood is for more than 17 years in the case of Swami Maujgiri Maharij when performing the *Tapasya* or penance from 1955 to November 1973 in Shahjahanpur, Uttar Pradesh, India. When sleeping he would lean against a plank. He died aged 85 in Sept 1980.

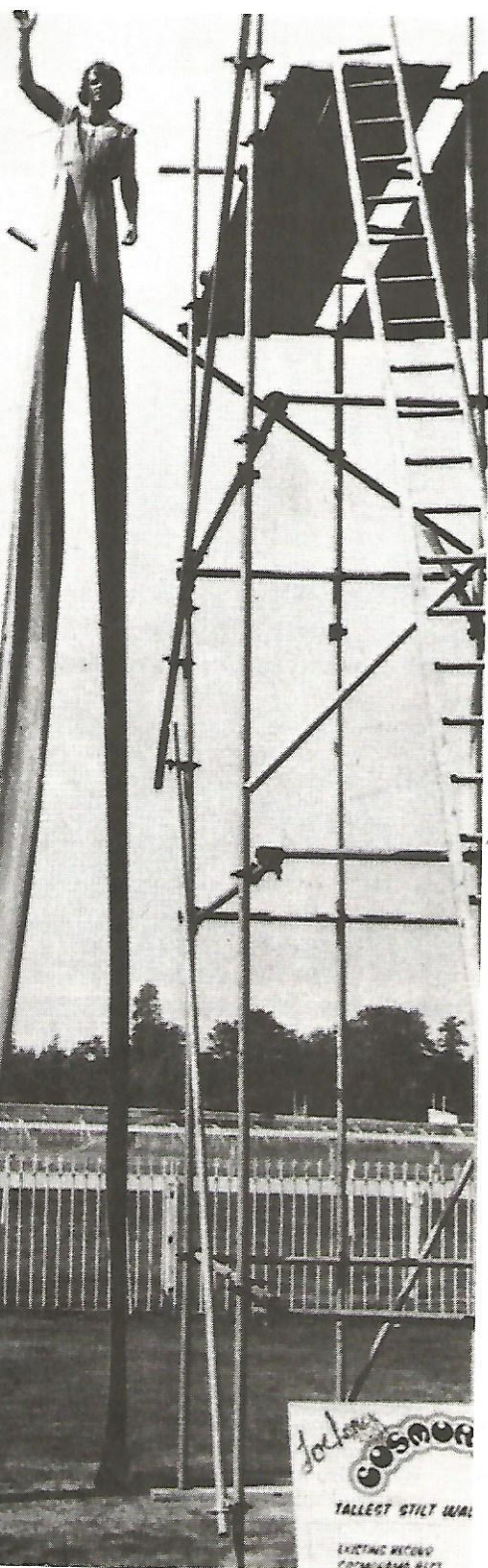
Stilt-walking

Hop stringers use stilts up to 15 ft 4.57 m. In 1892 M. Garisoain of Bayonne stilt-walked 8 km 4.97 miles into Biarritz in 42 min to average 11,42 km/h 7.10 mph. In 1891 Sylvain Dornon stilt-walked from Paris to Moscow via Vilno in 50 stages for the 1830 miles 2945 km. Another source gives his time as 58 days. Even with a safety or Kirby wire very high stilts are extremely dangerous—25 steps are deemed to constitute 'mastery'. Eddy Wolf (also known as Steady Eddy) of Loyal, Wisconsin, USA mastered stilts measuring 40 ft 2 in 12,24 m from ground to ankle over a distance of 31 steps without touching his safety hand rail wires, in Hollywood, California on 4 Dec 1981. His aluminium stilts weighed 40 lb 18,1 kg each. Joe Long (b. Kenneth Caesar), who has suffered 5 fractures, mastered 56 lb 25,4 kg 24 ft 7,31 m stilts at the BBC TV Centre, London on 8 Dec 1978. The endurance record is 3008 miles 4840 km from Los Angeles, California to Bowen, Kentucky from 20 Feb to 26 July 1980 by Joe Bowen. Masaharu Tatsushiro, 28, (Japan) ran 100 m 328 ft on 1 ft 30,48 cm high stilts in 14.15 sec in Tokyo on 30 Mar 1980.

Stowaway

The most rugged stowaway was Socarras Ramirez who escaped from Cuba on 4 June 1969 by stowing away in an unpressurized wheel well in the starboard wing of a Douglas DC8 from Havana to Madrid in a 5600 mile 9010 km Iberian Airlines flight. He survived 8 hr at 30,000 ft 9145 m where temperatures were -8°F -22°C.

Britain's tallest stilt-walker, Joe Long, wearing 24 ft 7.31 m stilts at Lingfield racecourse, Surrey (see p. 193). (*Daily Mirror*)



Stretcher bearing

The longest recorded carry of a stretcher case with a 10 st 63.5 kg 'body' is 127 miles 204.34 km in 45 hr 45 min by two four man teams from the Sri Chinmoy marathon team of Jamaica, NY, USA, on 17-19 Apr 1981.

The record limited to Youth Organizations (under 20 years of age) and 8 hr carrying is 42.02 miles 67.62 km by 8 members of the Henry Meoles School, Moreton, Wirral, Cheshire on 13 July 1980.

String ball largest

The largest ball of string on record is one of 12 ft 9 in 3.88 m in diameter, 40 ft 12.19 m in circumference and weighing

10 tons/tonnes amassed by Francis A. Johnson of Darwin, Minnesota, USA, between 1950-78.

Submergence

The most protracted underwater endurance record (excluding the use of diving bells) is 147 hr 15 min established by Robert Ingolia in tests in which the US Navy was the beneficiary of all data in 1961.

The continuous duration record (i.e. no rest breaks) for 'Scuba' (i.e. self-contained and without surface air hoses) is 69 hr 1 min by Robert Newton at The Holiday Inn, Leicester, England on 21-24 May 1982. Measures have to be taken to reduce the risk of severe desquamation.

Suggestion boxes

The most prolific example on record of the use of any suggestion box scheme is that of John Drayton (b. 18 Sept 1907) of Newport, Gwent who has plied British Rail and the companies from which it was formed with a total of 29,809 suggestions from 1924 to 4 Jan 1982 of which one in seven were accepted.

Swinging

The record duration for continuous swinging is 185 hr by Mollie Jackson of Tarrytown, New York, USA on 25 Mar-1 Apr 1979.

Switchback riding

The endurance record for rides on a roller coaster is 368 hr by Jim King at the Miracle Strip Amusement Park, Panama City, Florida, USA, on 22 June-7 July 1980. He covered a distance of 10,425 miles 16780 km to average 28.3 mph 45.59 km/h. The minimum qualifying average speed required is 25 mph 40 km/h.

Tailoring

The highest speed in which the manufacture of a 3 piece suit has been made from sheep to finished article is 1 hr 34 min 33.42 sec by 65 members of the Melbourne College of Textiles, Pascoe Vale, Victoria, Australia on 24 June 1982. The catching and fleecing took 2 min 21 sec, the carding, spinning, weaving and tailoring occupied the remaining time.

Talking

The world record for non-stop talking is 159 hr by Kapila Kumarasinghe, 16 on Buddhist culture in Colombo, Sri Lanka on 18-24 June 1981. A feminine non-stop talking record was set by Mrs Mary E. Davis, who on 2-7 Sept 1958 started at a radio station in Buffalo, New York and did not draw breath until 110 hr 30 min 5 sec later in Tulsa, Oklahoma, USA. The longest continuous political speech on record was one of 37 hr 45 min by K. H. Neville Ajith in Colombo, Sri Lanka on 30-31 Oct 1981. The longest recorded lecture was one of 59½ hr on 'Everything You Ever Wanted To Know About Sociology and People' by James Gray of Evergreen Valley College, San Jose, Calif, USA, on 11-14 Apr 1980.

Historically the longest recorded after-dinner speech with unsuspecting victims was one of 3 hr by the Rev. Henry Whitehead (d. March 1896) at the Rainbow Tavern, Fleet Street, London on 16 Jan 1874. Both Nicholas Parsons and Gyles Brandreth spoke for 11 hr from 8 p.m. to 7 a.m. on 13-14 Feb 1978 at the Hyde Park Hotel, London in aid of Action Research, to tie a longest after-dinner speech contest.

T-bone dive

The so-called T-bone dives or Dive Bomber crash by cars off ramps over and on to parked cars are often measured by the number of cars, but owing to their variable size and that their purpose is purely to cushion the shock, distance is more significant. The longest recorded distance in this highly dangerous activity is 196 ft 5 in 59.86 m by Jean-Pierre Vignau in a Ford Capri 2600 at Monthéry autodrome near Paris, France on 20 July 1980.

Teeth-pulling

The man with 'the strongest teeth in the world' is 'Hercules' John Massis (b. Wilfried Oscar Morbée, 4 June 1940) of Oostakker, Belgium, who raised a weight of 233 kg 513½ lb 15 cm 6 in from the ground with a teeth bit at Evrey, France on 19 Mar 1977. Massis prevented a helicopter from taking off using only a teeth-bit harness in Los Angeles on 7 Apr 1979 for a Guinness

Throwing

The greatest distance any inert object heavier than air has been thrown is 857 ft 8 in 261.42 m, in the case of a plastic 'Skyro' by Tom McRann, 30, in Golden Gate Park, San Francisco, Calif, USA, on 9 June 1980.

Tightrope walking

The greatest 19th century tightrope walker was Jean François Gravelet, alias Charles Blondin (1824-97), of France, who made the earliest crossing of the Niagara Falls on a 3 in 76 mm rope, 1100 ft 335 m long, 160 ft 48.75 m above the Falls on 30 June 1859. He also made a crossing with Harry Colcord, pick-a-back on 15 Sept 1860. Though other artists still find it difficult to believe, Colcord was his agent. The oldest wirewalker was 'Professor' William Ivy Baldwin (1866-1953), who crossed the South Boulder Canyon, Colorado, USA on a 320 ft 97.5 m wire with a 125 ft 38.1 m drop on his 82nd birthday on 31 July 1948.

Tightrope walking Endurance

The world tightrope endurance record is 185 days by Henri Rochetaud (b. 1926) of France on a wire 394 ft 120 m long, 82 ft 25 m above a supermarket in Saint Etienne, France, on 28 Mar-29 Sept 1973. His ability to sleep on the wire has left doctors puzzled. He walked some 500 km 310 miles on the wire to keep fit.

Tightrope walking Highest and Steepest

Steve McPeak (b. 21 April 1945) of Las Vegas, Nevada, USA ascended the 46.6 mm 1.83 in diameter Zugspitzbahn cable for a vertical height of 705 m 2313 ft in 3 stints aggregating 5 hr 4 min on 24/25/28 June 1981.

The maximum gradient over the stretch of 2282 m 7485 ft was above 30 degrees. Earlier on 28 June 1981 he had walked on a thinner stayed cable 181 steps across a gorge at the top of the 2963 m 9721 ft mountain with a sheer drop of 960 m 3150 ft below him.

The first crossing of the River Thames was achieved by Charles Elleano (b. 1911) of Strasbourg, France on a 1050 ft 320 m wire 60 ft 18.2 m above the river in 25 min on 22 Sept 1951.

Tree-climbing

The fastest speed climb up a 100 ft 30.4 m fir spar pole and return to the ground is one of 27.93 sec by Clarence Bartow of Grants Pass, Oregon, USA on 27 July 1980.

The fastest time up a 9 m 29.5 ft coconut tree barefoot is 4.88 sec by Fuatai Solo, 17, in Sukuna Park, Fiji on 22 Aug 1980.

Tree-sitting

The duration record for sitting in a tree is 182 days 2 min by Glen T. Woodrich, 23, at Golf N' Stuff Amusement Park, Norwalk, Calif., USA from 1 Jan-2 July 1978.

Typewriting Fastest

The highest recorded speeds attained with a ten-word penalty per error on a manual machine are:

One Min: 170 words, Margaret Owen (US) (Underwood Standard), New York, 21 Oct 1918.
One Hour: 147 words (net rate per min) Albert Tangora (US) (Underwood Standard), 22 Oct 1923.

The official hour record on an electric machine is 9316 words (40 errors) on an IBM machine, giving a net rate of 149 words per min, by Margaret Hamma, now Mrs Dilmore (US), in Brooklyn, New York City, NY, USA on 20 June 1941. Mrs Barbara Blackburn of Everett, Washington can maintain 150 wpm for 50 min (37,500 key strokes) and attain speeds of 170 wpm using the Dvorak Simplified Keyboard (DSK) system.

In an official test in 1946 Stella Pajunas, now Mrs Garnard, attained a rate of 216 words in a minute on an IBM machine.

Typewriting Longest

The world duration record for typewriting on an electric machine is 214 hr by Violet Gibson Burns at Cremorne, Sydney, Australia on 18-27 Feb 1980. Mrs Marva Drew, 51, of Water-

loo, Iowa, USA between 1968 and 30 Nov 1974 typed the numbers 1 to 1,000,000 on a manual typewriter on 2473 pages. Asked why, she replied 'But I love to type'.

The longest duration typing marathon on a manual machine is 120 hr 15 min by Mike Howell, a 23-year-old blind office worker from Greenfield, Oldham, Greater Manchester on 25-30 Nov 1969 on an Olympia manual typewriter in Liverpool. In aggregating 561,006 strokes he performed a weight movement of 2482 tons 2521 tonnes plus a further 155 tons 157 tonnes on moving the carriage for line spacing.

Tyre supporting

The greatest number of motor tyres supported in a free-standing 'lift' is 80 by Gary Windebank of Romsey, Hants on 27 Sept 1980 at Bayeux, Normandy, France. The total weight was 1182 lb 536.14 kg. The tyres used were Michelin XZX 155 x 13.

Unsupported circle

The highest recorded number of people who have demonstrated the physical paradox of all being seated without a chair is an unsupported circle of 5810 staged by Channel 8, Fuji Telecast of Tokyo, Japan in September 1980.

Waiters marathon

Beverly Hills restaurateur Roger Bourban (b. 10 May 1948 Switzerland), *le garçon rapide*, ran a full marathon in full uniform in London on 9 May 1982 carrying a free standing open bottle of mineral water on a tray in the same hand (gross weight 3 lb 2 oz 1.42 kg) in 2 hr 47 min.

Walking on hands

The duration record for walking on hands is 1400 km 871 miles by Johann Hurlinger, of Austria, who in 55 daily 10 hr stints, averaged 1.58 mph 2.54 km/h from Vienna to Paris in 1900. Thomas P. Hunt of USAF Academy, Colorado Springs, completed a 50 m 54.68 yd inverted sprint in 18.4 sec in Tokyo on 22 Sept 1979.

Wall of death

The greatest endurance feat on a wall of death was 6 hr 7 min 38 sec by Hugo Dabbert (b. Hildesheim, 24 Sept 1938) at Rüsselsheim, West Germany on 14 Aug 1980. He rode 6841 laps on the 10 m 32.8 ft diameter wall on a Honda CM 400T averaging 35.2 km/h 21.8 mph for the 214.8 km 133.4 miles.

Whip cracking

The longest stock whip ever 'cracked' (i.e. the end made to travel above the speed of sound—760 mph 1223 km/h) is one of 104 ft 5 in 31.82 m (excluding the handle) wielded by Noel Harris at Sunbury, Melbourne, Australia on 24 June 1982.

Window cleaning

The fastest time in the Ettore Challenge Cup contest has been 24.0 sec plus ten 1/2 sec smear penalties to equal 29 sec by Nicholas Woolman of Braunstone, Frith, Leicester at the NEC, Birmingham on 29 Apr 1980 for 3 standard 1040 x 1153 mm 40.94 x 45.39 in office windows with a 300 mm 11.8 in long squeegee and 9 litres 15.83 pts of water.

Wire Slide

The greatest distance recorded in a wire slide is from a height of 175 ft 53.3 m over a distance of 300 ft 91.44 m by Grant Page with Bob Woodham over his shoulder across the Australian landmark known as 'The Gap' for the filmed episode in 'The Stunt Men' in 1972.

Wood-cutting

The earliest competitions date from Tasmania in 1874. The records set at the Lumberjack World Championships at Hayward, Wisconsin (founded 1960) are:

Power Saw	11.16 sec	Ron Johnson (US)	1980
One-Man Bucking	22.83 sec	Ron Hartill (NZ)	1976
Standing Block Chop	26.90 sec	Ron Wilson (Aust)	1973
Underhand Block Chop	20.30 sec	Jim Alexander (Aust)	1973
Two-Man Bucking	9.98 sec	Merv Jensen (NZ) Cliff Hughes (NZ)	1977

White pine logs 14 in 35.5 cm diameter are used for chopping and 20 in 50.8 cm for sawing.

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Writing minuscule

In 1926 an account was published of Alfred McEwen's panto-graph record in which the 56 word version of the Lord's Prayer was written by diamond point on glass in the space of 0.0016×0.0008 in 0.04×0.02 mm. Frank C. Watts of Felmingham, Norfolk demonstrated for photographers on 24 Jan 1968, his ability, without mechanical or optical aid, to write the Lord's Prayer 34 times (9452 letters) within the size of a definitive UK postage stamp (viz.) 0.84×0.71 in 21.33×18.03 mm.

Writing under handicap

The ultimate feat in 'funny writing' would appear to be the ability to write extemporaneously and decipherably backwards, upside down, laterally inverted (mirror-style) while blindfolded with both hands simultaneously. Three claims to this ability with both hands and feet simultaneously, by Mrs Carolyn Webb of Thirlmere, NSW, Australia, Mrs Judy Hall of Chesterfield, Virginia, USA, and Robert Gray of Toronto, Ontario, Canada are under investigation.

Yodelling

The most protracted yodel on record was that of Errol Bird for 10 hr 15 min in Lisburn, Northern Ireland on 6 Oct 1979.

Yo-yo

The yo-yo originates from a Filipino jungle fighting weapon recorded in the 16th century weighing 4 lb with a 20 ft 6 m string. The word means 'come-come'. Though illustrated in a book in 1891 as a bandalore the craze did not begin until it was started by Donald F. Duncan of Chicago, USA in 1926. The most difficult modern yo-yo trick is the 'Whirlwind' incorporating both inside and outside horizontal loop-the-loops. The individual continuous endurance record is 120 hr by John Winslow of Gloucester, Virginia, USA on 23-28 Nov 1977. Dr Allen Bussey in Waco, Texas on 23 Apr 1977 completed 20,302 loops in 3 hr (including 6886 in a single 60 min period). He used a Duncan Imperial with a $3\frac{1}{2}$ in 87.6 cm nylon string.

The largest yo-yo ever constructed was one by Dr Tom Kuhn weighing 256 lb 116.11 kg test launched from a 150 ft 52.2 m crane in San Francisco, California on 13 Oct 1979.

WEALTH AND POVERTY

The comparison and estimations of extreme personal wealth are beset with intractable difficulties. Quite apart from reticence and the element of approximation in the valuation of assets, as Jean Paul Getty (1892-1976) once said 'if you can count your millions you are not a billionaire'. The term millionaire was invented c. 1740 and billionaire in 1861. The earliest dollar billionaires were John Davison Rockefeller (1839-1937); Henry Ford (1863-1947) and Andrew William Mellon (1855-1937). In 1937, the last year in which all 3 were alive, a billion US dollars were worth £205 million but that amount of sterling would today have a purchasing power in excess of £2800 million.

Richest men World

The fortune of Daniel K. Ludwig (b. South Haven, Michigan, June 1897) was estimated as high as \$3000 million in 1977. It is believed that his wood pulp investment in 4,000,000 acres 1618700 ha of Amazonian jungle around Jari, Brazil in 1967 for \$5 million had led to a drain of more than \$1 billion by Apr 1981 by which time he was described by *Fortune Magazine* as an 'ex-billionaire'. The only other living US businessman to have experienced the problems of a ninth nought is (Henry) Ross Perot (b. Texarkana, Texas, 27 June 1930), who in December 1980 was briefly a billionaire on paper before the slump in Electronic Data Systems shares. The richest US millionaire is now believed to be Forrest E. Mars Sr (b. 1907) of Las Vegas, whose wealth is nearing \$1000 million.

Richest man Great Britain

The richest man in Great Britain is reputed to be Sir John Mortimer, CBE the co-founder of Littlewoods football pools in 1923. In 1973 he was estimated to be worth about £400 million (since £1320 million in 1982 £'s). His first job after leaving school at 14 was as a telephone operator. He was born in Eccles, Lancashire in 1896. He reassumed the chairmanship of Littlewoods on 17 Oct 1980 and finally retired in February 1982.

Richest incomes

The greatest incomes derive from the collection of royalties per

barrel by rulers of oil-rich sheikhdoms, who have not abrogated personal entitlement. Shaikh Zayid ibn Sultan an-Nuhayan (b. 1918) head of state of the United Arab Emirates arguably has title to some \$9000 million of the country's annual gross national product.

The highest gross income ever achieved in a single year by a private citizen is an estimated \$105,000,000 (then £21½ million) in 1927 by the Neapolitan born Chicago gangster Alphonse ('Scarface Al') Capone (1899-1947). This was derived from illegal liquor trading and alky-cookers (illicit stills), gambling establishments, dog tracks, dance halls, 'protection' rackets and vice. On his business card Capone described himself as a 'Second Hand Furniture Dealer'. The highest gross earned income in a year by a UK subject is reputedly in excess of £25 million earned by Paul McCartney MBE in 1979/80.

Proved wills and death duties

Sir John Reeves Ellerman, 2nd Bt, (1909-73) left £53,238,370 on which all-time record death duties were payable. This is the largest will ever proved in the United Kingdom. The greatest will proved in Ireland was that of the 1st Earl of Iveagh (1847-1927), who left £13,486,146.

Millionairesses

The world's wealthiest woman was probably Princess Wilhelmina Helena Pauline Maria of Orange-Nassau (1880-1962), formerly Queen of the Netherlands from 1890 to her abdication, 4 Sept 1948, with a fortune which was estimated at over £200 million. The largest amount proved in the will of a woman in the United Kingdom has been the £4,075,550 (duty paid £3,233,454) of Miss Gladys Meryl Yule, daughter of Sir David Yule, Bt. (1858-1928), in August 1957. Mrs. Anna Dodge (later Mrs. Hugh Dillman) who was born in Dundee, Scotland, died on 3 June 1970 in the United States, aged 103, and left an estate of £40,000,000.

The cosmetician Madame Charles Joseph Walker *née* Sarah Breedlove (b. Louisiana Delta, USA 23 Dec 1867) is reputed to have become the first self-made millionairess. She was an uneducated Negro orphan scrub-woman whose fortune was founded on a hair straightener.

It was estimated by the United States Trust Co in 1980 that over half of the USA's 574,342 millionaires are in fact millionairesses. The highest density is in Idaho (264.6 per 10,000) and the lowest in Wyoming. New York (56,096) leads California (38,691).

Millionaire and millionairess Youngest

The youngest person ever to accumulate a million dollars was the child film actor Jackie Coogan (b. Los Angeles, 26 Oct 1914) co-star with Sir Charles Chaplin (1889-1977) in 'The Kid' made in 1920. Shirley Temple (b. Santa Monica, California 23 Apr 1928), formerly Mrs John Agar, Jr, now Mrs Charles Black, accumulated wealth exceeding \$1,000,000 (then £209,000) before she was 10. Her child actress career spanned the years 1934-9.

Richest families

It has been tentatively estimated that the combined value of the assets nominally controlled by the Du Pont family of some 1600 members may be of the order of \$150,000 million. The family arrived in the USA from France on 1 Jan 1800. Capital from Pierre Du Pont (1730-1817) enabled his son Eleuthère Irénée Du Pont to start his explosives company in the United States. Europeans with family assets reportedly in excess of a billion dollars include the Wallenbergs of Sweden.

Largest dowry

The largest recorded dowry was that of Elena Patiño, daughter of Don Simón Iturbi Patiño (1861-1947), the Bolivian tin millionaire, who in 1929 bestowed £8,000,000 from a fortune at one time estimated to be worth £125,000,000.

Greatest miser

If meanness is measurable as a ratio between expendable assets and expenditure then Henrietta (Hetty) Howland Green (*née* Robinson) (1835-1916), who kept a balance of over \$31,400,000 (then £6.2 million) in one bank alone, was the all-time world champion. Her son had to have his leg amputated because of her delays in finding a free medical clinic. She herself lived off cold porridge because she was too thrifty to heat it. Her estate

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proved to be of \$95 million (then £19 million [and now worth £270 million]).

Return of cash

The largest amount of cash ever found and returned to its owners was \$500,000 (US) found by Lowell Elliott, 61 on his farm at Peru, Indiana, USA. It had been dropped in June 1972 by a parachuting hi-jacker.

Greatest bequests

The greatest bequests in a life-time of a millionaire were those of the late John Davison Rockefeller (1839–1937), who gave away sums totalling \$750,000,000 (now £350 million). The greatest benefactions of a British millionaire were those of William Richard Morris, later the Viscount Nuffield, GBE, CH (1877–1963), which totalled more than £30,000,000 between 1926 and his death on 22 Aug 1963. The Scottish-born US citizen Andrew Carnegie (1835–1919) is estimated to have made benefactions totalling £70 million during the last 18 years of his life. These included 7689 church organs and 2811 libraries. He had started life in a bobbin factory at \$1.20 per week.

The largest bequest made in the history of philanthropy was the \$500,000,000 (then £178,570,000) gift, announced on 12 Dec 1955, to 4157 educational and other institutions by the Ford Foundation (established 1936) of New York City, NY, USA.

Salary Highest World

The highest reported remuneration of any US businessman in 1981 was \$5,658,000 (£3,143,000) in salary, bonus, stock awards and other benefits received by Mr Roland Genin, executive vice-president of the New York oil field equipment manufacturer Schlumberger. The highest amount in pure salary was \$640,000 (£355,000) by C. C. Garvin Jr, chairman of Exxon.

Highest Fees

The highest paid investment consultant in the world is Dr Harry D. Schultz, who operates from Western Europe. His standard consultation fee for 60 minutes is \$2000 on weekdays and \$3000 at weekends. His quarterly retainer permitting companies to call him on a daily basis is \$28,125. He writes and edits an information packed International Newsletter instituted in 1964 now sold at \$25 or £11 per copy.

Salary Highest Great Britain

Britain's highest paid executives are the four directors of Queen Productions Ltd. whose accounts published in February 1981 showed drawings for between £660,000 and £697,000 by John Deacon, 29 (bass guitarist); Dr Brian May, 30 (lead guitarist); Freddie Mercury (lead singer) and Roger Taylor, 31 (drummer). The highest salary paid by any public company in 1981 was £477,100 to Mr Richard V. Giordano (b. New York, 1931), chief executive of BOC (British Oxygen) International.

Golden handshake

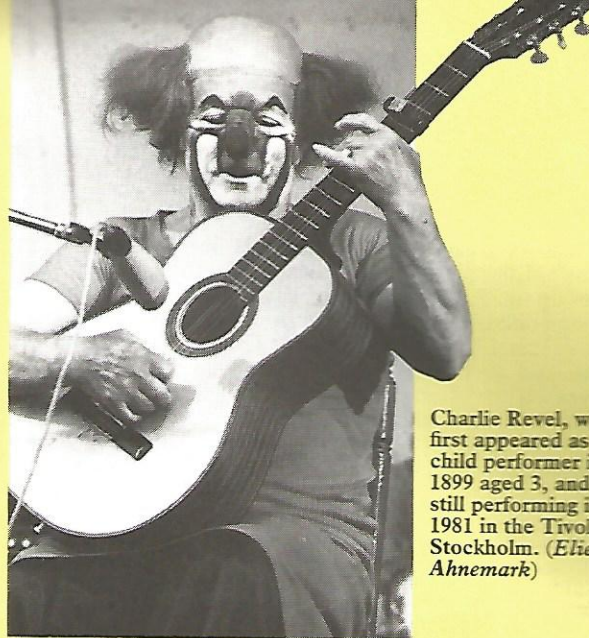
The highest carat handshake approved in Britain was one of £300,000 for Malcolm Anson, 57, on 9 July 1981 from Imperial Group of which he had been the Chairman. Approvals to pay £560,000 to Mr Jack Gill, former managing director of Associated Communications Corporation (ACC) has been adjourned pending litigation.

Lowest incomes

The poorest people in the world are the Tasaday tribe of cave-dwellers of central Mindanao, Philippines who were 'discovered' in 1971 without any domesticated animals, agriculture, pottery, wheels or clothes.

GLUTTONY RECORDS

Records for eating and drinking by trenchermen do not match those suffering from the rare disease of bulimia (morbid desire to eat) and polydipsia (pathological thirst). Some bulimia patients have to spend 15 hr a day eating, with an extreme consumption of 384 lb 2 oz 174,236 kg of food in six days by Matthew Daking, aged 12, in 1743 (known as Mortimer's case). Fannie Meyer of Johannesburg, after a skull fracture, was stated in 1974 to be unsatisfied by less than 160 pints of water a day. By October 1978 he was down to 52 pints. Miss Helge Andersson (b. 1908) of Lindesberg, Sweden was reported in January 1971



Charlie Revel, who first appeared as a child performer in 1899 aged 3, and was still performing in 1981 in the Tivoli, Stockholm. (Eliel Ahnemark)

CIRCUS RECORDS

A table of historic circus records from 1859 to date was published in the 26th Edition at p. 233. New records set since 1975 are as follows

Flying Trapeze:	Downward circles or 'Muscle grinding'—306 by Denise La Grassa (US) Circus World Museum, Baraboo, Wisconsin, USA, 9 May 1977. Single heel hang on swinging bar, Angela Revelle (Angeliq), Australia, 1977.
Highest Aerial Act:	Celeste Starr performed a trapeze act suspended from a cable car on the Teleférico Mérida, Venezuela (15,629 ft 4763 m) in July 1981.
Triple Twisting Double Somersault:	Tom Robin Edleston to catcher John Zimmerman, Circus World, Florida, 20 Jan 1981
Full Twisting Triple and the Quadruple Somersault:	Vasquez Troupe. Miguel Vasquez to catcher Juan Vasquez at Ringling Bros, Amphitheatre, Chicago, USA in Nov 1981.
Teeter Board:	Six man high perch pyramid, Emilia Ivanova (Bulgaria) of the Kehaiovi Troupe at Inglewood, California, USA, 21 July 1976.
Trampoline:	Septuple twisting back somersault to bed and quintuple twisting back somersault to shoulders by Marco Canestrelli to Belmonte Canestrelli at Madison Square, NY, USA on 5 Jan and 28 Mar 1979. Richard Tison (France) performed a triple twisting triple back somersault for television near Berchtesgaden, West Germany on 30 June 1981.
Flexible Pole:	Double full twisting somersault to a 2 in 5.08 cm diameter pole by Roberto Tabak (aged 11) in Jarasota, Florida, USA in 1977.
Human Pyramid (or Tuckle)	Twelve (3 high) supported by a single understander. Weight 771 kg 1700 lb or 121.4 stone by Tahar Davis of the Hassani Troupe at BBC TV Pebble Mill Studio, Birmingham, England, on 17 Dec 1979. Six high (team of 81) 8 m 26 ft 3 in tall on 12 Apr 1981 at Yumenoshima, Tokyo, Japan.
Clown, Oldest:	Charlie Revel (b. Andrea Lassere in Spain 24 Apr 1896) performed for 82 years (1899–1981).

Largest circus

The world's largest permanent circus is Circus Circus, Las Vegas, Nevada, USA opened on 18 Oct 1968 at a cost of \$15,000,000 (then £6,250,000). It covers an area of 129,000 ft² 11 984 m² capped by a tent-shaped flexiglass roof 90 ft 27.43 m high. The largest travelling circus is the Circus Vargas in the USA which can accommodate 5000 people under its Big Top.

JUGGLING RECORDS

7 clubs	Albert Petrovski (USSR), 1963 Sorin Munteanu (Romania), 1975 Jack Bremlov, currently
8 plates	Enrico Rastelli (Italy), 1896–1931
10 balls	Enrico Rastelli (Italy), 1896–1931
11 rings	Petrovski, 1963–66 Eugene Belaur Sergei Ignatov (USSR)
Pirouettes with 3 cigar boxes	Kris Kremono (quadruple turn with 3 boxes in mid air)
Duration 5 clubs	16 min 20 sec, Igantov in USSR

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to have been drinking 40 pints 22.73 litres of water a day since 1922—a total of 87,600 gal 3982 hectolitres.

The world's greatest trencherman has been Edward Abraham ('Bozo') Miller (b. 1909) of Oakland, California, USA. He consumes up to 25,000 calories per day or more than 11 times that recommended. He stands 5 ft 7½ in 1.71 m tall but weighs from 20 to 21½ st 127–139 kg with a 57 in 144 cm waist. He had been undefeated in eating contests since 1931 (see below). The bargees on the Rhine are reputed to be the world's heaviest eaters with 5200 calories a day. However the New Zealand Sports Federation of Medicine reported in December 1972 that a long-distance road runner consumed 14,321 calories in 24 hr.

While no healthy person has been reported to have succumbed in any contest for eating non-toxic food or drinking non-alcoholic drinks, such attempts, from a medical point of view, must be regarded as *extremely inadvisable*, particularly among young people. Gluttony record attempts should aim at improving the rate of consumption rather than the volume. Guinness Superlatives will not list any records involving the consumption of more than 2 litres 3.52 Imperial pints of beer nor any at all involving spirits. Nor will records for such potentially dangerous categories as live ants, chewing gum, marsh mallow or raw eggs with shells be published. The ultimate in stupidity—the eating of a bicycle—has however been recorded since it is unlikely to attract competition.

Specific records have been claimed as follows:

Baked Beans
2780 cold baked beans one by one with a cocktail stick in 30 min by Karen Stevenson, of Wallasey, Merseyside on 4 Apr 1981.

Edible weight minimum 4½ oz 128 g each in 2 min by Dr Ronald L. Alkana at the University of California, Irvine on 7 Dec 1973.

Steven Petrosino drank one litre of beer in 1.3 sec on 22 June 1977 at 'The Gingerbreadman', Carlisle, Pennsylvania.
Peter G. Dowdeswell (b. London 29 July 1940) of Earls Barton, Northants holds the following records:

2 pints—2.3 sec Zetters Social Club, Wolverton, Bucks 11 June 1975
2 pints—6.0 sec Carriage Horse Hotel, Higham Ferrers, Northants 7 Feb 1975

2 pints—5.0 sec RAF Upper Heyford, Oxfordshire 4 May 1975
2 pints—5.4 sec Corby Town S.C., Northamptonshire 23 Jan 1976

2 pints—6.4 sec Top Rank Club, Northants 25 May 1975

Champion baked bean eater, Karen Stevenson of Wallasey, Merseyside who managed to spear and consume 2780 individually in 30 min. (John Davidson)



Endurance and Endeavour

- Bicycle**
15 days by Monsieur 'Mangetout' (M. Lotito) (stewed tyres and metal filings) at Evrey, France on 17 Mar–2 Apr 1977.
- Champagne**
1000 bottles per annum by Bobby Acland of the 'Black Raven', Bishopsgate, City of London.
- Cheese**
16 oz 453 g of Cheddar in 1 min 13 sec by Peter Dowdeswell (see above) in Earls Barton, Northants on 14 July 1978.
- Chicken**
27 (21b 907 g pullets) by 'Bozo' Miller (see above) at a sitting at Trader Vic's, San Francisco, California, USA in 1963.
- Clams**
424 (Littlenecks) in 8 min by Dave Barnes at Port Townsend Bay, Washington, USA on 3 May 1975.
- Doughnuts**
12¾ (51 oz 1,445 kg) in 5 min 46 sec by James Wirth, and 13 (52 oz 1,474 kg) in 6 min 1.5 sec by John Haight, both at the Sheraton Inn, Canandaigua, New York on 3 Mar 1981.
- Eels**
1 lb 453 g of eelers in 13.7 sec by Peter Dowdeswell at Reeves Club, Bristol on 20 Oct 1978.
- Eggs**
(Hard Boiled) 14 in 58 sec by Peter Dowdeswell (see above) at the Stardust Social Club, Corby, Northants on 18 Feb 1977.
(Soft Boiled) 32 in 78 sec by Peter Dowdeswell in Northampton, on 8 Apr 1978.
(Raw) 13 in 2.2 sec by Peter Dowdeswell at BBC, Norwich on 26 Jan 1978.
- Frankfurters**
23 (2 oz 56.6 g) in 3 min 10 sec by Lynda Kuerth, 21, at the Veterans Stadium, Philadelphia, on 12 July 1977.
- Gherkins**
1 lb 453 g in 43.6 sec by Rex Barker of Elkhorn, Nebraska, USA on 30 Oct 1975.
- Grapes**
31b 1 oz of grapes in 34.6 sec by Jim Ellis of Montrose, Michigan, USA on 30 May 1976.
- Haggis**
26 oz 737 g in 50 sec by Peter Dowdeswell at Reeves Club, Bristol on 21 Dec 1978.
- Hamburgers**
20¾ hamburgers (each weighing 3½ oz 100 g totalling 2,07 kg of meat) and buns in 30 min by Alan Peterson at Longview, Washington, USA on 8 Feb 1979.
- Ice Cream**
31b 6 oz 1,530 kg in 90 sec by Bennett D'Angelo at Dean Dairy, Waltham, Massachusetts, USA on 7 Aug 1977. The ice cream must be unmelted.
- Kippers**
27 (self-filleted) in 60 min by Karen Stevenson of Wallasey, Merseyside on 5 Mar 1982.
- Lemons**
12 quarters (3 lemons) whole (including skin and pips) in 15.3 sec by Bobby Kempf of Roanoke, Virginia, USA on 2 May 1979.
- Meat**
One whole roast ox in 42 days by Johann Ketzler of Munich, Germany in 1880.
- Meat Pies**
22 (each weighing 5½ oz 156 g) in 18 min 13 sec by Peter Dowdeswell of Earls Barton, Northants on 5 Oct 1978.
- Milk**
2 pt (1 Imperial quart or 113.5 centilitres) in 3.2 sec by Peter Dowdeswell (see above) at Dudley Top Rank Club, West Midlands on 31 May 1975.
- Oysters (Eating, Opening)**
41b 13 oz 2,18 kg (total number 250) in 2 min 52.33 sec by Ron Hansen at the Packer's Arms, Queenstown, South Island, New Zealand on 30 June 1982. The record for opening oysters is 100 in 3 min 1 sec by Douglas Brown, (b. 1944) at Christchurch, New Zealand on 29 Apr 1975.
- Pancakes**
(6 inch 15.2 cm diameter buttered and with syrup) 62 in 6 min 58.5 sec by Peter Dowdeswell (see above) at The Drapery, Northampton on 9 Feb 1977.
- Peanuts**
100 (whole unshelled) singly in 46 sec by Jim Kornitzer, 21 at Brighton, Sussex on 1 Aug 1979.
- Pickled Onions**
91 pickled onions (total weight 30 oz 850 g) in 1 min 8 sec by Pat Donahue in Victoria, British Columbia on 9 Mar 1978.
- Potatoes**
31b 1,36 kg in 1 min 22 sec by Peter Dowdeswell in Earls Barton, Northants on 25 Aug 1978.
- Potato Crisps**
Thirty 2 oz 56.6 g bags in 24 min 33.6 sec, without a drink, by Paul G. Tully of Brisbane University in May 1969. Charles Chip Inc of Mountville, Pennsylvania produced crisps 4 × 7 in 10 × 17.5 cm from outside potatoes in February 1977.
- Prunes**
144 in 53.5 sec by Peter Dowdeswell in Paris on 21 July 1980.
- Ravioli**
250 pieces (av. weight of each piece 8½ gr) in 66 min by John Keogh of Heaton, Bolton, Gtr Manchester on 16 Feb 1981.
- Sandwiches**
40 in 17 min 53.9 sec (jam 'butties' 6 × 3¼ × ½ in 15.2 × 9.5 × 1.2 cm) by Peter Dowdeswell on 17 Oct 1977 at The Donut Shop, Reedley, California, USA.
- Sausage Meat**
96 sausages each 1 oz 28.3 g, in 6 min by Steve Meltzer of Brooklyn, New York, USA on 14 Oct 1974. No 'Hot Dog' contest results have been remotely comparable.
- Shrimps**
31b 1,36 kg in 4 min 8 sec by Peter Dowdeswell of Earls Barton, Northants on 25 May 1978.
- Snails**
350 in 8 min 29 sec by Thomas Greene of La Plata, Maryland in Dominique's Restaurant, Washington DC, on 14 July 1981.
- Spaghetti**
100 yd 91.44 m in 27.75 sec by Donna Maiello at Ann and Tony's Restaurant, Bronx, New York, USA, on 22 May 1982.
- Tortilla**
74 (total weight 4 lb 1½ oz 1,85 kg) in 30 min by Tom Nall in the 2nd World Championship at Mariano's Mexican Restaurant, Dallas, Texas, USA on 16 Oct 1973.

Honours, Decorations and Awards

Tree

11 ft 3.35 m Birch (4.7 in 12 cm diameter trunk) in 89 hrs by Jay Gwaltney, 19 on WKQX's 'Outrageous Contest', Chicago, 11-15 Sept 1980.

Whelks

82 (unshelled) in 5 min 26 sec by John Fletcher at the Castle Inn, Dover, Kent on 27 July 1980.

2. HONOURS, DECORATIONS AND AWARDS

Oldest Order

The order which can trace its origins furthest back is the Military Hospitaller Order of St Lazarus of Jerusalem founded by St Basil the Great in the 4th Century AD. The prototype of the princely Orders of Chivalry is the Most Noble Order of the Garter founded by King Edward III in c. 1348. A date as early as AD 809 has been attributed to the Most Ancient Order of the Thistle but is of doubtful provenance.

Eponymous record

The largest object to which a human name is attached is the universe itself—in the case of the 'standard' cosmological model devised in 1922 by the Russian mathematician Aleksandr Aleksandrovitch Friedman (1888-1925) and known as Friedman's Universe. This model was undermined in January 1980 by the quadropole or isotropy theory, which denies the Friedmanian model. The new model may be eventually named after F. Melchiori of the University of Florence.

Most titles

The most titled person in the world is the 18th Duchess of Alba (Alba de Tormes), Doña Maria del Rosario Cayetana Fitz-James Stuart y Silva. She is 8 times a duchess, 15 times a marchioness, 21 times a countess and is 19 times a Spanish grandee.

Versatility

The only person to win a Victoria Cross and an Olympic Gold Medal has been Lt Gen Sir Philip Neame VC, KBE, CB, DSO (1888-1978). He won the VC in 1914 and was an Olympic gold medallist for Britain for rifle shooting in 1924 though under the illusion at the time that he was shooting for the British Empire. The only George Cross holder who is also a Fellow of the Royal Society is Prof Peter Victor Danckwerts, GC, MBE, FRS (b. 1916) who diffused 16 parachute mines in the London docks during the Battle of Britain as a Sub Lt RNVR.

Victoria Cross Double awards

The only three men ever to have been awarded a bar to the Victoria Cross (instituted 29 Jan 1856) are:

Surg-Capt (later Lt-Col) Arthur Martin-Leake, VC*, VD, RAMC (1874-1953) (1902 and bar 1915).

Capt Noel Godfrey Chavasse, VC*, MC, RAMC (1884-1917) (1916 and bar posthumously 14 Sept 1917).

Second Lieut (later Capt) Charles Hazlitt Upham, VC*, NZMF (b. 21 Sept 1908) (1941 and bar 1942).

The most VC's awarded in a war were the 634 in World War I (1914-18). The greatest number won in a single action was 11 at Rorke's Drift in the Zulu War on 22-23 Jan 1879.

Victoria Cross Youngest

The lowest established age for a VC is 15 years 100 days for Hospital Apprentice Andrew (wrongly gazetted as Arthur) Fitzgibbon (born at Peteragurh, northern India, 13 May 1845) of the Indian Medical Services for bravery at the Taku Forts in northern China on 21 Aug 1860. The youngest living VC is Lieutenant Rambahadur Limbu (b. Nepal, 1939) of the 10th Princess Mary's Own Gurkha Rifles. The award was for his courage as a L/Cpl while fighting in the Bau district of Sarawak, East Malaysia, on 21 Nov 1965.

Victoria Cross Longest lived

The longest lived of all the 1349 winners of the Victoria Cross was Captain (later General Sir) Lewis Stratford Tollemache Halliday, VC, KCB, of the Royal Marine Light Infantry. He was born on 14 May 1870, won his VC in China in 1900, and died on 9 Mar 1966, aged 95 years 299 days.

Most highly decorated

The only four living persons to have been twice decorated with



Brigadier Alistair Pearson CB, DSO, OBE, MC, TD, former Commanding Officer of the 1st and 8th Paras, one of the only two army officers to win the DSO and 3 bars in World War II. (Mitchell and Averell)

any of the United Kingdom's topmost decorations are Capt C. H. Upham VC and bar; the Viscount De L'Isle VC, KG; HRH the Duke of Edinburgh KG, KT and HRH Prince Charles KG, KT. Lord De L'Isle is the only person who has both the highest military and highest civil honour. Britain's most highly decorated woman is the World War II British agent Mrs Odette Hallowes GC, MBE, Légion d'Honneur, Ordre St George (Belge), who survived imprisonment and torture at the hands of the Gestapo in 1943-45.

Record Price

The highest ever paid for a VC group has been £32,000 for the medals of CSM Stanley Hollis (1913-1972) of the Green Howards at Sotheby's, London on 4 Mar 1982. He won his VC on D Day in 1944.

George Cross

The highest award ever given to a woman is the George Cross. The oldest female recipient was Miss Emma Josie Townsend (formerly EGM) aged 53 in 1932 and the youngest is Mrs Doreen Ashburnham-Ruffner (formerly AM) aged 11 in 1916.

Order of Merit

The Order of Merit (instituted on 23 June 1902) is limited to 24 members. Up to 30 June 1982 there have been 136 awards including only 3 women, plus 9 honorary awards to non-British citizens. The longest lived holder has been the Rt Hon. Bertrand Arthur William Russell, 3rd Earl Russell, who died on 2 Feb 1970 aged 97 years 260 days. The oldest recipient was Admiral of the Fleet the Hon. Sir Henry Keppel, GCB, OM, (1809-1904), who received the Order aged 93 years 56 days on 9 Aug 1902. The youngest recipient has been HRH the Duke of Edinburgh, KG, KT, OM, GBE, who was appointed on his 47th birthday on 10 June 1968.

Most mentions in despatches

The record number of 'mentions' is 24 by Field Marshal the Rt Hon Sir Frederick Sleigh Roberts Bt, the Earl Roberts, VC, KG, KP, GCB, OM, GCSI, GCIE, VD (1832-1914).

Most post-nominal letters

Lord Roberts (see above) was the only non-royal holder of 8 sets of official post-nominal letters. HRH Prince Arthur, Duke of Connaught KG, KT, KP, GCB, GCSI, GCIE, GCVO, GBE, VD, TD (1850-1942) had 10 sets. Currently the record number is seven by Marshal of the RAF the Rt Hon Lord Elworthy KG, GCB, CBE, DSO, MVO, DFC, AFC (b 23 Mar 1911) of New Zealand.

USSR

The USSR's highest award for valour is the Gold Star of a Hero of the Soviet Union. Over 10,000 were awarded in World War II. Among the 109 awards of a second star were those to Marshal Iosif Vissarionovich Dzhugashvili, alias Stalin (1879-1953) and Lt-General Nikita Sergeyevich Khrushchyov (1894-1971). The only war-time triple awards were to Marshal Georgiy Konstantinovich Zhukov, Hon GCB (1896-1974) (subsequently awarded a fourth Gold Star) and to the leading air aces Guards' Colonel (now Marshal of Aviation) Aleksandr Ivanovich Pokryshkin and Aviation Maj Gen Ivan Nikitovich Kozhedub. Zhukov also uniquely had the Order of Victory, twice, the Order of Lenin 6

HUMAN ACHIEVEMENTS

times and the Order of the Red Banner, thrice.

Germany

The only man to be awarded the Knight's Cross of the Iron Cross with swords, diamonds and golden oak-leaves was Col Hans-Ulrich Rudel for services on the Eastern Front in 1941-5.

USA

The highest US military decoration is the Congressional Medal of Honor. Five marines received both the Army and Navy Medals of Honor for the same acts in 1918 and 14 officers and men from 1863 to 1915 have received the medal on two occasions.

Top Scoring Air Aces (World Wars I and II)

The 'scores' of air aces in both wars are *still* hotly disputed. The highest figures officially attributed have been:

	World	United Kingdom
World War I	80 Rittmeister Manfred, Freiherr (Baron) von Richt-hofen (Germany) ¹	73 Major Edward Mannock, VC, DSO**, MC*
World War II	352 Major Erich Hartmann (Germany)	38 Wg Cdr (now AVM) James Edgar Johnson, CB, CBE, DSO**, DFC ²

¹ Fewer than 60 of this total could subsequently be verified from German records. The official score of Col René Paul Fonck Gr Cordon L'de'H, C de G (25 palms), Med Mil, MC**, C d G (Belge) (d. 1953) was 75 but unofficially as high as 126. ² The greatest number of successes against flying bombs (V.1's) was by Sqn Ldr Joseph Berry, DFC** (b. Nottingham, 1920, killed 2 Oct 1944) who brought down 60 in 4 months. The most successful fighter pilot in the RAF was Sqn Ldr Marmaduke Thomas St John Partle, DFC*, of South Africa, with a known total of at least 40.

Top jet ace

The greatest number of kills in jet to jet battles is 16 by Capt Joseph Christopher McConnell, Jr, USAF (b. Dover, New Hampshire, 30 Jan 1922) in the Korean war (1950-3). He was killed on 25 Aug 1954. It is possible that an Israeli ace may have surpassed this total in the period 1967-70 but the identity of pilots is subject to strict security.

Top woman ace

The record score for any woman fighter pilot is 12 by Jnr Lt Lydia Litvak (USSR) (b. 1921) on the Eastern Front between 1941 and 1943. She was killed in action on 1 Aug 1943.

Anti-tank successes

Col Hans-Ulrich Rudel, the German *Stuka* pilot, in 2530 combat missions destroyed 519 Soviet armoured vehicles and was uniquely awarded the golden oak-leaves to the Knight's Cross of the Iron Cross on 1 Jan 1945 (see Germany above).

Anti-submarine successes

The highest number of U-boat kills attributed to one ship in the 1939-45 war was 15 to HMS *Starling* (Capt Frederic John Walker, CB, DSO***, RN). Captain Walker was in command at the sinking of a total of 25 U-boats between 1941 and the time of his death on 9 July 1944. The US Destroyer Escort *England* sank six Japanese submarines in the Pacific between 18 and 30 May 1944.

Most successful submarine captains

The most successful of all World War II submarine commanders was Lieutenant Otto Kretschmer, captain of the U.23 and U.99 who up to March 1940 sank one destroyer and 44 Allied merchantmen totalling 266,629 gross registered tons.

In World War I Kapitän-Leutnant (later Vizeadmiral) Lothar von Arnauld de la Périère, in the U.35 and U.139, sank 195 allied ships totalling 458,856 gross tons. The most successful boats were U.35, which in World War I sank 54 ships of 90,350 grt in a single voyage and 224 ships of 539,711 grt all told, and U.48 which sank 51 ships of 310,007 grt in World War II. The largest target ever sunk by a submarine was the Japanese aircraft carrier *Shinano* (59,000 tons) by USS *Archerfish* (Cdr Joseph F. Enright, USN) on 29 Nov 1944.

NOBEL PRIZE

The Nobel Foundation of £3,200,000 was set up under the will of Alfred Bernhard Nobel (1833-96), the unmarried Swedish chemist and chemical engineer, who invented dynamite, in

Honours, Decorations and Awards

1866. The Nobel Prizes are presented annually on 10 Dec, the anniversary of Nobel's death and the festival day of the Foundation. Since the first Prizes were awarded in 1901, the highest cash value of the award, in each of the six fields of Physics, Chemistry, Medicine and Physiology, Literature, Peace and Economics (inst. 1969) was Sw Kr 880 000 (£88,620) in 1980.

Most awards by countries (shared awards count as one)

United States citizens have won outright or shared in the greatest number of awards (including those made in 1981) with a total of 156 made up of 43 for Physics, 23 for Chemistry, 55 for Medicine-Physiology, 9 for Literature, 17 for Peace and 9 for Economics.

The United Kingdom has shared in 73 awards, comprising 20 for Physics, 22 for Chemistry, 14 for Medicine-Physiology, 9 for Peace, 5 for Literature and 3 for Economics.

By classes, the United States holds the record for Medicine-Physiology with 55, for Physics with 43, for Peace with 17, for Economics with 9, and for Chemistry with 23. France has the record for Literature with 12.

Individuals

Individually the only person to have won two Prizes outright is Dr Linus Carl Pauling (b. 28 Feb 1901), Professor of Chemistry at the California Institute of Technology, Pasadena, California, USA since 1931. He was awarded the Chemistry Prize for 1954 and the Peace Prize for 1962. The only other persons to have won two prizes are Madame Marie Curie (1867-1934), who was born in Poland as Marja Skłodowska. She shared the 1903 Physics Prize with her husband Pierre Curie (1859-1906) and Antoine Henri Becquerel (1852-1908), and won the 1911 Chemistry Prize outright. Professor John Bardeen (b. 23 May 1908) shared the Physics Prize in 1956 and 1972. Professor Frederick Sanger, CBE, FRS (b. 13 Aug 1918) has twice shared the Chemistry Prize—in 1958 and 1980. The Peace Prize has been awarded three times to the International Committee of the Red Cross (founded 29 Oct 1863), of Geneva, Switzerland, namely in 1917, 1944 and in 1963, when it was shared with the International League of Red Cross Societies.

Oldest

The oldest prizeman has been Professor Francis Peyton Rous (1879-1970) of the United States. He shared the Medicine Prize in 1966, at the age of 87.

Youngest

The youngest laureate has been Professor Sir William Lawrence Bragg, CH, OBE, MC (1890-1971), of the UK, who at the age of 25, shared the 1915 Physics Prize with his father, Sir William Henry Bragg, OM, KBE (1862-1942), for work on X-rays and crystal structures. Bragg and also Theodore William Richards (1868-1928) of the USA, who won the 1914 Chemistry Prize, carried out their prize work when aged 23. The youngest Literature prizeman has been Joseph Rudyard Kipling (1865-1936) at the age of 41 in 1907. The youngest Peace prize-winner has been the Rev Dr Martin Luther King, Jr (1929-68) of the USA, in 1964 at the age of 35.

Most Valuable Annual Prize

The highest valued annual award is the Templeton Foundation Prize for Progress in Religion inaugurated in 1972 by Mr John M. Templeton (b. 1912). The award was increased to £100,000 for 1982 and was won by the preacher Billy Graham (b. 7 Nov 1918).

Most statues

The world record for raising statues to oneself was set by Generalissimo Dr Rafael Leónidas Trujillo y Molina (1891-1961), former President of the Dominican Republic. In March 1960 a count showed that there were 'over 2000'. The country's highest mountain was named Pico Trujillo (now Pico Duarte). One province was called Trujillo and another Trujillo Valdez. The capital was named Ciudad Trujillo (Trujillo City) in 1936, but reverted to its old name of Santo Domingo de Guzmán on 23 Nov 1961. Trujillo was assassinated in a car ambush on 30 May 1961, and 30 May is now celebrated annually as a public holiday. The man to whom most statues have been raised is undoubtedly Vladimir Ilyich Ulyanov, *alias* Lenin (1870-1924), busts of

whom have been mass-produced as also in the case of Mao Tse-tung (1893–1976) and Ho Chi Minh (1890–1969).

PEERAGE

Most ancient

The oldest extant peerage is that of the premier Earl of Scotland, the Rt Hon Margaret of Mar, the Countess of Mar and 31st holder of this Earldom (b. 19 Sept 1940), who is the heir-at-law of Roderick or Rothri, 1st Earl (or Mormaer) of Mar, who witnessed a charter in 1114 or 1115 as 'Rothri comes'.

Oldest creation

The greatest age at which any person has been raised to the peerage is 93 years 337 days in the case of Sir William Francis Kyffin Taylor, GBE, KC (b. 9 July 1854), who was created Baron Maenan of Ellesmere, County Shropshire, on 10 June 1948, and died, aged 97, on 22 Sept 1951. The oldest elevation to a Life Peerage has been that of Emmanuel Shinwell CH (b. 18 Oct 1884) on 2 June 1970 when aged 85 years 227 days.

Longest lived peer

The longest lived peer ever recorded was the Rt Hon Frank Douglas-Pennant, the 5th Baron Penrhyn (b. 21 Nov 1865), who died on 3 Feb 1967, aged 101 years 74 days. The oldest peeress recorded was the Countess Desmond, who was alleged to be 140 when she died in 1604. This claim is patently exaggerated but it is accepted that she may have been 104. Currently the oldest holder of a peerage, and the oldest Parliamentarian, is the Rt Hon Robert William O'Neill, 1st Baron Rathcavan who was 99 on 18 June 1982. He contested the 1906 General Election.

Youngest peers

Twelve Dukes of Cornwall became (in accordance with the grant by the Crown in Parliament) peers at birth as the eldest son of a Sovereign; and the 9th Earl of Chichester posthumously inherited his father's (killed 54 days previously) earldom at his birth on 14 Apr 1944. The youngest age at which a person has had a peerage conferred on him is 7 days old in the case of the Earldom of Chester on HRH the Prince George (later George IV) on 19 Aug 1762.

Longest and shortest peerages

The longest tenure of a peerage has been 87 years 10 days in the case of Charles St Clair, Lord Sinclair b. 30 July 1768, succeeded 16 Dec 1775 and died aged 94 years 243 days on 30 Mar 1863.

The shortest enjoyment of a peerage was the 'split second' by which the law assumes that the Hon Wilfrid Carlyle Stamp (b. 28 Oct 1904), the 2nd Baron Stamp, survived his father, Sir Josiah Charles Stamp, GCB, GBE, the 1st Baron Stamp, when both were killed as a result of German bombing of London on 16 Apr 1941. Apart from this legal fiction, the shortest recorded peerage was one of 30 min in the case of Sir Charles Brandon, KB, the 3rd Duke of Suffolk, who died, aged 13 or 14, just after succeeding his brother, Henry, when both were suffering a fatal illness, at Buckden, Cambridgeshire, on 14 July 1551.

Highest numbering

The highest succession number borne by any peer is that of the present 35th Baron Kingsale (John de Courcy, b. 27 Jan 1941), who succeeded to the then 746-year-old Barony on 7 Nov 1969.

Most creations

The largest number of new hereditary peerages created in any year was the 54 in 1296. The record for all peerages (including 40 life peerages) is 55 in 1964. The greatest number of extinctions in a year was 16 in 1923 and the greatest number of deaths was 44 in 1935.

Most prolific

The most prolific peers of all time are believed to be the 1st Earl Ferrers (1650–1717) and the 3rd Earl of Winchilsea (c. 1620–89) each with 27 legitimate children. In addition, the former reputedly fathered 30 illegitimate children. Currently the peer with the largest family is the Rt Hon Bryan Walter Guinness, 2nd Baron Moyne (b. 27 Oct 1905) with 6 sons and 5 daughters.

The most prolific peeress is believed to be Mary Fitzgerald, wife of Patrick, 19th Baron Kingsale who bore 23 children (no twins) who survived baptism. She died in 1663.

Baronets

The greatest age to which a baronet has lived is 101 years 188 days, in the case of Sir Fitzroy Donald Maclean, 10th Bt., KCB (1835–1936). He was the last survivor of the Crimean campaign of 1853–56. The only baronetess is Dame Maureen Dunbar of Hempriggs, who succeeded in her own right as 8th in line of a 1706 baronetcy in 1965.

Knights

The greatest number of knights dubbed in a single day was 432 by James I in the Royal Garden, Whitehall on 23 July 1603. On his coronation day two days later, he appointed 62 Knights of the Garter.

Youngest and oldest

The youngest age for the conferment of a knighthood is 29 days for HRH the Prince Albert Edward (b. 9 Nov 1841) (later Edward VII) by virtue of his *ex officio* membership of the Order of the Garter (KG) consequent upon his creation as Prince of Wales on 8 Dec 1841. The greatest age for the conferment of a knighthood is on a 100th birthday, in the case of the knight bachelor Sir Robert Meyer, additionally made a KCVO by the Queen at the Royal Festival Hall, London on 5 June 1979.

Most brothers

George and Elizabeth Coles of Australia had 5 sons knighted—Sir George, CBE (1885–1977); Sir Arthur (b. 1892); Sir Kenneth (b. 1896); Sir Edgar (b. 1899) and Sir Norman (b. 1907).

Most freedoms

Probably the greatest number of freedoms ever conferred on any man was 57 in the case of Andrew Carnegie (1835–1919), who was born in Dunfermline, Fife but emigrated to the United States in 1848. The most freedoms conferred upon any citizen of the United Kingdom is 42, in the case of Sir Winston Churchill (1874–1965).

Most honorary degrees

The greatest number of honorary degrees awarded to any individual is 90, given to Rev Father Theodore M. Hesburgh (b. 1918), president of the University of Notre Dame, Indiana, USA. These were accumulated from 1954 to June 1982.

Greatest vote

The largest monetary vote made by Parliament to a subject was the £400,000 given to the 1st Duke of Wellington (1769–1852) on 12 Apr 1814. He received in all £864,000. The total received by the 1st, 2nd and 3rd Dukes to January 1900 was £1,052,000.

The Royal Society

The longest term as an FRS (Fellow of the Royal Society) has been 61 years in the case of Bertrand Russell, first Baron (1872–1970), who had been elected in 1908. The longest lived FRS has been Sir Rickard Christophers KT, CIE, OBE (1873–1978) aged 104 years 84 days. John Lubbock (1834–1913), later 1st Baron Avebury, was elected at the age of 23 in 1857.

Who's Who

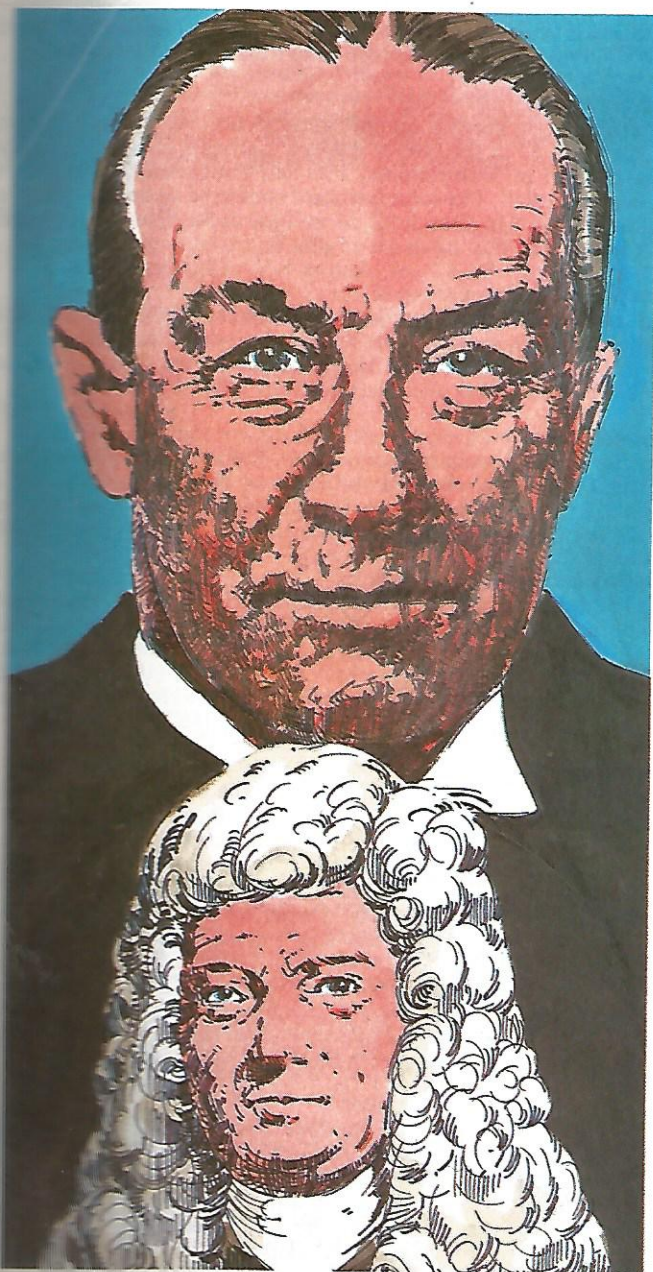
The longest entry in *Who's Who* (founded 1848) was that of the Rt Hon Sir Winston Leonard Spencer Churchill, KG, OM, CH, TD (1874–1965), who appeared in 67 editions from 1899 (18 lines) and had 211 lines by the 1965 edition. Currently the longest entry is that of Barbara Cartland, the romantic novelist, with 119 lines. Apart from those who qualify for inclusion by hereditary title, the youngest entry has been Yehudi Menuhin, Hon. KBE (b. New York City, USA 22 Apr 1916), the concert violinist, who first appeared in the 1932 edition aged 15. The longest entry of the 66,000 entries in *Who's Who in America* is that of Dr Glenn T. Seaborg (b. 19 Apr 1912) whose all-time record of 100 lines compares with the 9 line sketch on President Reagan.

Oxford and Cambridge Unions

Four brothers were Presidents of the Union in the case of the sons of the Rt Hon Isaac Foot. Sir Dingle Foot (Balliol, 1927–8); John (Lord Foot) (Balliol, 1930–1) and Rt Hon Michael (Wadham, 1933–4) at Oxford and Hugh (Lord Caradon) (St John's, 1929) at Cambridge. The last named's son Paul was President at Oxford (University College, 1960–1). The longest debate staged by the Oxford Union was one of 48 hr 6 min on the motion that 'This House will go on for ever' on 29–31 May 1981 chaired by their President, Alexandra Jones.

11. The Human World

GUINNESS BOOK OF RECORDS



UK Premiership: longest term and most times

1. POLITICAL AND SOCIAL

Detailed information on all the sovereign and non-sovereign countries of the world is contained in *The Guinness Book of Answers* (4th Edition) (Price £6.95).

The land area of the Earth is estimated at 57,267,400 miles² 148 321 800 km² (including inland waters), or 29.08 per cent of the world's surface area.

Largest political division

The British Commonwealth of Nations, a free association of 45 sovereign independent states together with their dependencies and 4 associated states covers an area of 13,095,000 miles² 33 915 000 km² with a population which in 1980 surpassed 1,000,000,000.

COUNTRIES

Total

The world comprises 168 sovereign countries and 47 separately administered non-sovereign territories making 215. The United Nations additionally still list 3, East Timor (now incorporated into Indonesia), Western Sahara (now in Morocco) and the uninhabited Canton Island (now in Kiribati). They do not list the *de facto* territories of Taiwan, Mayotte or Spanish North Africa. Neither do they list the three Baltic States of Estonia, Latvia and Lithuania whose forcible incorporation into the USSR in 1940 is not internationally recognized. Six further territories without indigenous populations namely the four Antarctic dependencies (Australian, British, French and the Ross Dependency of New Zealand) and the two further Australian dependencies of Coral Sea Islands and the Territory of Heard and McDonald Islands would bring the total to 224.

Largest

The country with the greatest area is the Union of Soviet Socialist Republics (the Soviet Union), comprising 15 Union (constituent) Republics with a total area of 22 402 200 km² 8,649,500 miles², or 15.0 per cent of the world's total land area, and a total coastline (including islands) of 106 360 km 66,090 miles. The country measures 8980 km 5580 miles from east to west and 4490 km 2790 miles from north to south and is 91.8 times the size of the United Kingdom. Its population on 1 Jan 1982 was 268.8 million.

The United Kingdom covers 94,221 miles² 244 030 km² (including 1197 miles² 3100 km² of inland water), or 0.16 per cent of the total land area of the world. Great Britain is the world's eighth largest island, with an area of 84,186 miles² 218 040 km² and a coastline 4928 miles 7930 km long, of which Scotland accounts for 2573 miles 4141 km, Wales 426 miles 685 km and England 1929 miles 3104 km.

Smallest

The smallest independent country in the world is the State of the Vatican City or Holy See (Stato della Città del Vaticano), which was made an enclave within the city of Rome, Italy on 11 Feb 1929. The enclave has an area of 44 hectares 108.7 acres. The maritime sovereign country with the shortest coastline is Monaco with 3.49 miles 5.61 km excluding piers and breakwaters.

The world's smallest republic is Nauru, less than 1 degree south of the equator in the Western Pacific, which became independent on 31 Jan 1968, has an area of 5263 acres 2129 ha and a population of 8000 (latest estimate mid-1980). Tuvalu has an area of 6080 acres 2460 ha but a population of 7300 (May 1979).

The smallest colony in the world is Gibraltar with an area of 2½ miles² 5.8 km². However, Pitcairn Island, the only inhabited (63 people, 1980) island of a group of 4 (total area 18½ miles² 48 km²) has an area of 1½ miles² or 960 acres 388 ha.

The official residence, since 1834, of the Grand Master of the Order of the Knights of Malta totalling 3 acres 1.2 ha and comprising the Villa del Priorato di Malta on the lowest of Rome's seven hills, the 151 ft 46 m Aventine, retains certain diplomatic privileges as does 68 Via Condotti. The order has accredited representatives to foreign governments and is hence sometimes cited as the smallest 'state' in the world.

Flattest and Most Elevated

The country with the lowest highest point is the Republic of the

Maldives which attains 8 ft 2.4 m. The country with the highest lowest point is Lesotho. The egress of the Senqu (Orange) river-bed is 4530 ft 1381 m above sea level.

Most impenetrable boundary

The 'Iron Curtain' (858 miles 1380 km) dividing the Federal Republican (West) and the Democratic Republican (East) parts of Germany, utilizes 2,230,000 land mines and 50,000 miles 80 500 km of barbed wire, much of it of British manufacture, in addition to many watch-towers containing detection devices. The whole strip of 270 yd 246 m wide occupies 133 miles² 344 km² of East German territory and cost an estimated \$7000 million to build and maintain. It reduced the westward flow from more than 200,000 in 1961 to 5761 escapees in 1962 and to only 18 a month in 1980 including the 106th fatality.

Longest and Shortest frontier

The longest continuous frontier in the world is that between Canada and the United States, which (including the Great Lakes boundaries) extends for 3987 miles 6416 km (excluding 1538 miles 2547 km with Alaska). The frontier which is crossed most frequently is that between the United States and Mexico. It extends for 1933 miles 3110 km and there are more than 120,000,000 crossings every year. The Sino-Soviet frontier, broken by the Sino-Mongolian border, extends for 4500 miles 7240 km with no reported figure of crossings. The 'frontier' of the Holy See in Rome measures 2.53 miles 4.07 km. The land frontier between Gibraltar and Spain at La Linea, closed since 1969, measures 1672 yd 1.53 km. Zambia, Zimbabwe, Botswana and Namibia (South West Africa) meet at a point.

Most frontiers

The country with the most land frontiers is China, with 13—Mongolia, USSR, North Korea, Hong Kong, Macau, Vietnam, Laos, Burma, India, Bhutan, Nepal, Pakistan and Afghanistan. France, if all her *Départements d'outre-mer* are included, may, on extended territorial waters, have 20 frontiers.

POPULATIONS

World

Estimates of the world's population have hitherto largely hinged on the accuracy of the component figure for the population of the People's Republic of China, which published no census between 1953 (582.6 million) and mid-1979 (958.05 million). The daily increase in the world's population is 232,800, or 161 per minute. It is estimated that 75,000,000,000 humans have been born and died in the last 600,000 years.

Most populous country

The largest population of any country is that of China, which in pinyin is written Zhongguo. The mid-1979 census was 958,050,000. The rate of natural increase in the People's Republic of China is now estimated to have been reduced from 2.3 in 1971 to less than 1.2 in 1978 so the 1000 million mark should not now be reached until mid 1983.

Least populous

The independent state with the smallest population is the Vatican City or the Holy See (see Smallest country, page 202), with 728 inhabitants at mid-1978 and a nil return for births.

Most densely populated

The most densely populated territory in the world is the Portuguese province of Macau (or Macao), on the southern coast of China. It has an estimated population of 275,000 (mid-1980) in an area of 6.2 miles² 16.05 km² giving a density of 44,350 per mile² 17 133 per km².

The Principality of Monaco, on the south coast of France, has a population of 27,000 (mid-1981) in an area of 470 acres 190 ha giving a density of 36,765/mile² 14 195/km². This is being relieved by marine infilling which will increase her area to 447 acres 180 ha. Singapore has 2,413,945 (mid-1980) people in an inhabited area of 73 miles² 189 km².

Of territories with an area of more than 1000 km², Hong Kong (405 miles² 1049 km²) contains 5,068,000 (estimated mid-1980), giving the territory a density of 12,513/mile² 4831/km². Hong Kong is now the most populous of all colonies. The transcrip-

WORLD POPULATION *Progressive estimates*

Date	Millions	Date	Millions
10 000 BC	c.5	1950	2513
AD 1	c.200	1960	3049
1000	c.275	1970	3704
1250	375	1975	4033
1500	420	1976	4107
1650	550-600	1977	4182
1700	615	1978	4258
1750	720	1979	4336
1800	900	1980	4415
1900	1625	1981	4495
1920	1862	1982*	4580
1930	2070	2000	6200†
1940	2295		

* Provisional Estimate for mid-year.

† Some demographers maintain that the figure will (or must) stabilize at 10-15,000 million but above 8000 million during the 21st century. The Tsui-Bogue estimate from the University of Chicago for AD 2000 is 5800 million, compared with the U.N. low-estimate of 5855 million, mid-estimate as given and high-estimate of 6508 million. Note The all-time peak annual increase of 2.0% c 1958-1962 had declined to 1.8% by 1980. This however still produces a rising annual increment, now rising from about 85 million to more than 90 million a year in the 1990s.

tion of the name is from a local pronunciation of the Peking dialect version of Xiang gang (a port for incense). The 1976 by-census showed that the West Area of the urban district of Mong Kok on the Kowloon Peninsula had a density of 252,090/km² 652,910/mile². In 1959, at the peak of the housing crisis, it was reported that in one house designed for 12 people the number of occupants was 459, including 104 in one room and 4 living on the roof.

Of countries over 1000 miles² 2589 km² the most densely populated is Bangladesh with a population of 88,656,000 (mid-1980 estimate) living in 55,126 miles² 142 775 km² at a density of 1608/mile² 620/km². The Indonesian island of Java (with an area of 48,763 miles² 126 295 km²) had a population of 94,693,000 (1981 estimate), giving a density of 1941/mile² 750/km².

The United Kingdom (94,221 miles² 244 030 km²) had an estimated census population of 55,671,000 at 5 Apr 1981, giving a density of 590.8 people/mile² 228.1/km². The population density for the Greater London Borough of Kensington and Chelsea is 5312/km² 13,292/mile².

Most sparsely populated

Antarctica became permanently occupied by relays of scientists from October 1956. The population varies seasonally and reaches 1500 at times.

The least populated territory, apart from Antarctica, is Kalaatdlit Nunaat (formerly Greenland), with a population of 50,000 (estimated mid-1980) in an area of 840,000 miles² 2 175 000 km² giving a density of one person to every 16.15 miles² 41.83 km². Some 84.3 per cent of the island comprises an ice-cap.

The lowest population densities in the United Kingdom are in the Scottish Highlands and Islands with 13.1/km² 5.05/mile². The most sparsely populated county in England is Cumbria with 69.4/km² 26.79/mile².

Emigration

More people emigrate from Mexico than from any other country. An estimated 800,000 emigrated illegally into the USA in 1976 alone. A total of 210,300 emigrated from the UK in 1976. The largest number of emigrants in any one year was 360,000 in 1852, mainly from Ireland. The number of UK citizens leaving from mid 1980-mid 1981 was 158,000.

Immigration

The country which regularly receives the most legal immigrants is the United States, with more than 800,000 in 1980. It has been estimated that in the period 1820-1980, the USA has received more than 50 million official immigrants. One in 24 of the US population is however an illegal immigrant to which another 700,000 were added in 1980. The peak year for immigration into the United Kingdom was the 12 months from 1 July 1961 to 30

THE HUMAN WORLD

Political and Social

June 1962, when about 430,000 Commonwealth citizens arrived. The number of new Commonwealth and Pakistani immigrants in 1979-80 was 37,000 bringing the estimated total to 2,104,000 or 3.9 per cent of the population by mid-1980.

Most patient 'Refusnik'

The USSR citizen who has waited longest for an exit visa is Benjamin Boyornolny (b. 7 Apr 1946) who first applied in 1966.

Tourism

In 1981 the United Kingdom received 11,486,000 visitors who spent an estimated £2999 million excluding fares to British carriers.

Birth rate Highest and Lowest

The highest estimated by the UN is 54.6 per 1000 for Kenya in 1980. The rate for the whole world was 29 per 1000 in 1978. A world wide survey published in July 1979 showed only Nepal (44.4) with a still rising birth rate.

Excluding Vatican City, where the rate is negligible, the lowest recorded rate is 10.0 for the Federal Republic of Germany (1980).

The 1980 rate in the United Kingdom was 13.4/1000 (13.3 in England and Wales, 13.3 in Scotland and 18.5 in Northern Ireland), while the 1978 rate for the Republic of Ireland was 21.1 registered births per 1000. The highest number of births in England and Wales (since the first full year of 463,787 in 1838) has been 957,782 in 1920 and the lowest this century 569,259 in 1977. After falling each year since 1964 (875,972) the figure started rising again at the end of 1977 with the 1980 figure being 656,234 or 1792 per day or 1.24 per minute.

Death rate Highest and Lowest

The death rate for the whole world was 11 per 1000 in 1978. The highest of the latest available recorded death rates is 25.4 deaths per 1000 of the population in Yemen (1975-80).

The lowest of the latest available recorded rates is 1.9 deaths/1000 in Tonga in 1976.

The 1980 rate in the United Kingdom was 11.8/1000 (11.7 in England and Wales, 12.2 in Scotland and 10.8 in Northern Ireland). The highest SMI (Standard Mortality Index where the national average is 100) is in Salford, Greater Manchester with a figure of 133. The 1978 rate for the Republic of Ireland was 10.0 registered deaths per 1000.

Natural increase

The rate of natural increase for the whole world is estimated to be $27.5 - 10.7 = 16.8$ per 1000 in 1982. The highest of the latest available recorded rates is 40.4 ($54.6 - 14.2$) in Kenya in 1980.

The 1980 rate for the United Kingdom was 1.6 (1.6 in England and Wales, 1.1 in Scotland and 7.6 in Northern Ireland). The rate for the first time in the first quarter of 1975 became one of natural decrease. The figure for the Republic of Ireland was 10.5/1000 in 1977.

The lowest rate of natural increase in any major independent country is in W. Germany with a negative figure of -1.5 per 1000 (10.0 births and 11.5 deaths) for 1980.

Marriage ages

The country with the lowest average ages for marriage is India, with 20.0 years for males and 14.5 years for females. At the other extreme is Ireland, with 31.4 for males and 26.5 for females. In the People's Republic of China the recommended age for marriage for men has been 28 and for women 25. In England and Wales the peak ages for marriage are 22.8 years (male) and 19.6 years (female).

Divorces

The country with most divorces is the United States with a total of 1,382,000 in 1980—a rate of 48.98 per cent on the current annual total of marriages.

Sex ratios

There were estimated to be 1003.5 men in the world for every

1000 women (1975). The country with the largest recorded shortage of males is the USSR, with 1145.9 females to every 1000 males (1981 census). The country with the largest recorded woman shortage is Pakistan, with 885 to every 1000 males in 1972. The figures are, however, probably under-enumerated due to *purdah*. The ratio in the United Kingdom was 1022 females to every 1000 males at mid-1980, and is expected to be 1014.2/1,000 by AD 2000.

Infant mortality

Based on deaths before one year of age, the lowest of the latest available recorded rates is 6.7 deaths per 1000 live births in Sweden in 1980. The world rate in 1978 was 91.

The highest recorded infant mortality rate reported has been 300 to 300 for Burma in 1952 and 259 for Zaire in 1950. In Ethiopia the infant mortality rate was unofficially estimated to be 550/1000 live births in 1969. Many Third World countries have ceased to make returns.

The United Kingdom figure for 1980 was 11.8/1000 live births (England and Wales 11.6, Scotland 11.9, Northern Ireland 13.1). The Republic of Ireland figure for 1977 was 15.7.

Life expectation

There is evidence that life expectation in Britain in the 5th century AD was 33 years for males and 27 years for females. In the decade 1890-1900 the expectation of life among the population of India was 23.7 years. World expectation of life has increased from 47.4 years (1950-55) to 64.5 years (1995-2000).

Based on the latest available data, the highest recorded expectation of life at age 12 months is 73.0 years for males and 79.2 years for females in Iceland (1975-6).

The lowest recorded expectation of life at birth is 27 years for both sexes in the Vallée du Niger area of Mali in 1957 (sample survey, 1957-8). The figure for males in Gabon was 25 years in 1960-1 but 45 for females.

The latest available figures for England and Wales (1975-7) are 69.9 years for males and 76.0 years for females; for Scotland (1976-8) 68.0 years for males and 74.37 years for females; for Northern Ireland (1975-7) 67.54 years for males and 73.84 years for females, and for the Republic of Ireland (1970-2) 68.77 years for males and 73.52 years for females. The British figure for 1901-10 was 48.53 years for males and 52.83 years for females.

Housing

For comparison, dwelling units are defined as a structurally separated room or rooms occupied by private households of one or more people and having separate access or a common passage-way to the street.

The country with the greatest recorded number of private housing units is India, with 100,251,000 occupied in 1972.

Great Britain had a stock of 21,025,000 dwellings as at 1 Jan 1981. The record number of permanent houses built in a year has been 413,715 in 1968.

Physicians

The country with the most physicians is the USSR, with 831,300, or one to every 307 persons. China had an estimated 1.4 million para-medical personnel known as 'bare foot doctors' by 1981. In England and Wales there were 103,837 doctors qualified to work as specialists in general practice or in industry as at 30 Sept 1978.

The country with the lowest recorded proportion is Upper Volta, with 58 physicians (one for every 92,759 people) in 1970.

Dentists

The country with the most dentists is the United States, where 138,000 were registered members of the American Dental Association in 1980.

Psychiatrists

The country with the most psychiatrists is the United States.

The registered membership of the American Psychiatric Association (inst. 1894) was 25,440 in 1980. The membership of the American Psychological Association (inst 1892) was 50,000 in 1980.

Hospital Largest World

The largest mental hospital in the world is the Pilgrim State Hospital, West Brentwood, Long Island, NY, USA, with 3618 beds. It formerly contained 14,200 beds.

The busiest maternity hospital in the world is the Mama Yemo Hospital, Kinshasa, Zaïre with 41,930 deliveries in 1976. The record 'birthquake' occurred on a day in May 1976 with 175 babies born. It has 599 beds.

Great Britain

The largest hospitals of any kind in Great Britain are Winwick Hospital near Warrington, with 1750 staffed beds, and Prestwich Hospital, Salford, Lancashire which has 1478 staffed beds for mental patients.

The largest general hospital in Great Britain is the St James Hospital, Leeds, West Yorkshire, with 1398 staffed beds.

The largest maternity hospital in Great Britain is the Simpson Memorial Maternity Pavilion, Edinburgh with 224 staffed beds.

The largest children's hospital in Great Britain is Queen Mary's Hospital for Children, at Carshalton, Sutton, Greater London, with 522 staffed beds.

Longest stay in hospital

Miss Martha Nelson was admitted to the Columbus State Institute for the Feeble-Minded in Ohio, USA in 1875. She died in January 1975 aged 103 years 6 months in the Orient State Institution, Ohio after spending more than 99 years in institutions.

Most Expensive

In mid-1980 the average daily cost of a day's stay in a California hospital was \$411 (£186) or \$2874 (£1300) per average stay.

CITIES

Oldest World

The oldest known walled town in the world is Arihā (Jericho). The latest radio-carbon dating on specimens from the lowest

WORLD'S MOST POPULOUS CITIES

Progressive List

Population	Name	Date
c. 150	Chemi Shanidar	Iraq 8910 BC
3,000	Jericho (Arihā)	Samaria 7800 BC
50,000	Uruk (Erech) (now Warka)	Iraq 3000 BC
250,000	Greater Ur	Iraq 2200 BC
350,000	Babylon (now al-Hillah)	Iraq 600 BC
500,000	Pataliputra (Paltna) Bihār	India 400-185 BC
600,000	Seleukia (near Baghdad)	Iraq 300 BC-165 AD
1,100,000	Rome (founded c. 510 BC)	Italy 133 BC
1,500,000	Angkor	Cambodia 900 AD
1.0-1.5 million	Hangchow (now Hangzhou)	China 1279
707,000	Peking (Cambaluc), (now Beijing)	China 1578
1,117,290	Greater London	United Kingdom 1801
8,615,050	Greater London (peak)	United Kingdom 1939
11,357,337 (est.)	Tokyo	Japan 1980

Note: The UN projections for AD 2000 for Greater Mexico City and Tōkyō-Yokohama are 31,616,000 and 26,128,000.

levels reached by archaeologists indicate habitation there by perhaps 3000 people as early as 7800 BC. The village of Zawi Chemi Shanidar, discovered in 1957 in northern Iraq, has been dated to 8910 BC. The oldest capital city in the world is Dimashq (Damascus), the capital of Syria. It has been continuously inhabited since c. 2500 BC.

Great Britain

The oldest town in Great Britain is often cited as Colchester, the old British Camulodunum, headquarters of Belgic chiefs in the 1st century BC. However, the name of the tin trading post Salakee, St Mary's, Isles of Scilly, is derived from pre-Celtic roots and hence *ante* 550 BC. The oldest borough in Britain is reputed to be Barnstaple, Devon whose charter was granted by King Athelstan (927-939) in AD 930.

Most populous World

The most populous 'urban agglomeration' in the world is the 'Keihin Metropolitan Area' (Tōkyō-Yokohama Metropolitan Area) of 1081 miles² 2800 km² containing an estimated 28,043,000 people in 1978. The municipal population of Tōkyō in 1980 was 11,357,337. The population of the metropolitan area of Greater Mexico City in 1979 was published as 13,950,364.

Potala Hill, also called Red Mountain, former palace of the Dalai Lamas in Lhasa, Tibet, once renowned as the highest capital in the world at 12,087 ft 3684 m (see p. 206).



Britain

The largest conurbation in Britain is Greater London (established on 1 Apr 1965), with a population of 6,696,008 (1981 census). The residential population of the City of London (677.3 acres 274 ha plus 61.7 acres 24.9 ha foreshore) is 4701 (1981) compared with 128,000 in 1801. The peak figure for Greater London was 8,615,050 in 1939.

Largest in area

The world's largest town, in area, is Mount Isa, Queensland, Australia. The area administered by the City Council is 15,822 miles² 40 978 km². The largest conurbation in the United Kingdom is the county of Greater London with an area of 609.8 miles² 1579.5 km².

Smallest town and hamlet

The smallest place with a town council is Caerwys, Clwyd, Wales with a population of 801. The town has a charter dated 1284.

Highest World

The highest capital in the world, before the domination of Tibet by China, was Lhasa, at an elevation of 12,087 ft 3684 m above sea-level. La Paz, the administrative and *de facto* capital of Bolivia, stands at an altitude of 11,916 ft 3631 m above sea-level. El Alto airport is at 4080 m 13,385 ft. The city was founded in 1548 by Capt Alonso de Mendoza on the site of an Indian village named Chuquiapu. It was originally called Ciudad de Nuestra Señora de La Paz (City of Our Lady of Peace), but in 1825 was
(continued on p. 207)

2. ROYALTY AND HEADS OF STATE

Longest ruling house

The Emperor of Japan, Hirohito (born 29 Apr 1901), is the 124th in line from the first Emperor, Jimmu Tenno or Zinmu, whose reign was traditionally from 660 to 581 BC, but more probably from c. 40 to c. 10 BC.

Her Majesty Queen Elizabeth II (b. 21 Apr 1926) represents dynasties historically traceable at least back until the 5th century AD, notably that of Elesa of whom Alfred The Great was a 13 great grandson and the Queen is therefore a 49 great granddaughter. If the historicity of some early Scoto-Irish and Pictish kings were acceptable, the lineage could be named to about 70 generations.

Longest

The longest recorded reign of any monarch is that of Pepi II, a

Sixth Dynasty Pharaoh of ancient Egypt. His reign began in c. 2310 BC, when he was aged 6, and lasted c. 94 years. Musoma Kanijo, chief of the Nzega district of western Tanganyika (now part of Tanzania), reputedly reigned for more than 98 years from 1864, when aged 8, until his death on 2 Feb 1963. The 6th Japanese Emperor Koo-an traditionally reigned for 102 years (from 392 to 290 BC), but probably his actual reign was from about AD 110 to about AD 140. The reign of the 11th Emperor Suinin was traditionally from 29 BC to AD 71 (99 years), but probably from AD 259 to 291. The longest reign of any major European monarch was that of King Louis XIV of France, who ascended the throne on 14 May 1643, aged 4 years 231 days, and reigned for 72 years 110 days until his death on 1 Sept 1715, four days before his 77th birthday. Grand Duke Karl Friederich of Baden (1728–1811) ruled from 12 May 1738 for 73 years 29 days.



BRITISH MONARCHY RECORDS

	Kings	Queens Regnant	Queens Consort
LONGEST REIGN OR TENURE	59 years 96 days ¹ George III 1760–1820	63 years 216 days Victoria 1837–1901	57 years 70 days Charlotte 1761–1818 (Consort of George III)
SHORTEST REIGN OR TENURE	77 days ² Edward V 1483	13 days ³ Jane, 6–19 July 1553	154 days Yoleta (1285–6) (second consort of Alexander III)
LONGEST LIVED	81 years 239 days ⁴ George III (b. 1738–d. 1820)	81 years 243 days Victoria (b. 1819–d. 1901)	85 years 303 days Mary of Teck (b. 1867–d. 1953) (Consort of George V)
MOST CHILDREN (LEGITIMATE) ⁵	18 Edward I 1272–1307	96 Victoria (b. 1819–d. 1901)	15 Eleanor (c. 1244–90) and Charlotte (b. 1744–d. 1818)
OLDEST TO START REIGN OR CONSORTSHIP	64 years 10 months William IV 1830–7	37 years 5 months Mary I 1553–8	56 years 53 days Alexandra (b. 1844–d. 1925) (Consort of Edward VII)
YOUNGEST TO START REIGN OR CONSORTSHIP	269 days Henry VI in 1422	6 or 7 days Mary, Queen of Scots in 1542	6 years 11 months Isabella (second consort of Richard II in 1396)
MOST MARRIED	6 times Henry VIII 1509–47	3 times Mary, Queen of Scots 1542–57 (executed 1587)	4 times Catherine Parr (b. c. 1512–d. 1548) (sixth consort of Henry VIII)
MOST ALIVE SIMULTANEOUSLY	Between 30 Oct 1683 (birth of George Augustus of Hanover, later George II) and 6 Feb 1685 (death of Charles II) there were 7 monarchs living simultaneously (Charles II, James II, William and Mary, Anne, George I and II) and also Richard Cromwell (d. 1712) the 2nd Lord Protector and <i>de facto</i> Head of State in 1658–59.		

Notes: Dates are dates of reigns or tenures unless otherwise indicated.

¹ James Francis Edward, the Old Pretender, known to his supporters as James III, styled his reign from 16 Sept 1701 until his death 1 Jan 1766 (i.e. 64 years 109 days).

² There is the probability that in pre-Conquest times Sweyn 'Forkbeard', the Danish King of England, reigned for only 40 days in 1013–14.

³ She accepted the allegiance of the Lords of the Council (9 July) and was proclaimed on 10 July so is often referred to as the '9 (or 10) day Queen'.

⁴ Richard Cromwell (b. 4 Oct 1626), the 2nd Lord Protector from 3 Sept 1658 until his abdication on 24 May 1659, lived under the alias John Clarke until 12 July 1712 aged 85 years 9 months and was thus the longest lived Head of State.

⁵ Henry VIII (1491–1547) in addition to one (possibly two) legitimate sons and a daughter had at least 20 bastard children (9 sons, 11 daughters), and possibly 22, by six mistresses.

⁶ Queen Anne (b. 1665–d. 1714) had 17 pregnancies, which produced only 5 live births.

renamed La Paz de Ayacucho, its present official name. Sucre, the legal capital of Bolivia, stands at 9301 ft 2834 m above sea-level. The new town of Wenchuan, founded in 1955 on the Chinghai-Tibet road, north of the Tangla range, is the highest in the world at 5100 m 16,732 ft above sea-level. The highest dwellings in the world are those at Bāsisi, India near the Tibet border at c. 19,700 ft 5988 m.

Great Britain

The highest village in Britain is Flash, in northern Staffordshire, at 1518 ft 462 m above sea-level. The highest in Scotland is Wanlockhead, in Dumfries and Galloway at 1380 ft 420 m above sea-level.

Lowest

The settlement of Ein Bokek, which has a synagogue, on the shores of the Dead Sea is the lowest in the world at 1291 ft 393.5 m below sea-level.

Northernmost

The world's most northerly town with a population of more than 10,000 is the Arctic port of Dikson, USSR in 73° 32' N. The northernmost village is Ny Ålesund (78° 55' N.), a coalmining settlement on King's Bay, Vest Spitsbergen, in the Norwegian territory of Svalbard, inhabited only during the winter season. The northernmost capital is Reykjavik, the capital of Iceland, in 64° 08' N. Its population was estimated to be 83,887 (1978 est.). The northernmost permanent human occupation is the base at

(continued on p. 208)

The Guinness Book of Kings, Rulers and Statesmen by Clive Carpenter (Guinness Superlatives, £7.95) contains much extra information.

Currently the longest reigning monarch in the world is King Sobhuza II, KBE (b. 22 July 1899), the *Ngwenyama* (Paramount Chief) of Swaziland, who succeeded on 10 Dec 1899 at the age of 141 days and reigned under the regency of his grandmother Queen Labotsibeni until he assumed full powers on 6 Dec 1921. *Burke's Royal Families of the World* lists 28 wives and 85 children. Hirohito (see Oldest Ruling House) has been Emperor in Japan since 25 Dec 1926.

Roman Occupation

During the 369 year long Roman occupation of England, Wales and parts of Scotland there were 40 sole and 27 co-Emperors of Rome. Of these the longest reigning was Constantine I (The Great) from 31 Mar 307 to 22 May 337—30 years 2 months.

Shortest

King Virabahu of the Kalinga Kshatriya dynasty of Ceylon (Sri Lanka) was assassinated a few hours after he was crowned at Polonnaruwa in 1196.

Highest post-nominal numbers

The highest post-nominal number ever used to designate a member of a Royal House was 75 briefly enjoyed by Count Heinrich LXXXV Reuss (1800–1). All male members of this branch of this German family are called Heinrich and are successively numbered from I upwards each century.

The highest British regnal number is 8, used by Henry VIII (1509–1547) and by Edward VIII (1936) who died as HRH the Duke of Windsor, KG, KT, KP, GCB, GCSI, GCMG, GCIE, GCVO, GBE, ISO, MC, on 28 May 1972. Jacobites liked to style Henry Benedict, Cardinal York (b. 1725), the grandson of James II, as Henry IX in respect of his 'reign' from 1788 to 1807 when he died as last survivor in the male line of the House of Stuart.

Longest lived 'Royals'

The longest life among the Blood Royal of Europe has been that of the late HRH Princess Alicia of Bourbon who was born on 29 June 1876 and died on 20 Jan 1975 aged 98 years 206 days. The greatest age among European Royal Consorts is the 101 years 268 days of HSH Princess Leonilla Bariatsky (b. Moscow, 9 July 1816), who married HSH Prince Louis of Sayn-Wittgenstein-Sayn and died in Ouchy, Switzerland on 1 Feb 1918. The longest-lived Queen on record has been the Queen Grandmother of Siam, Queen Sawang (b. 10 Sept 1862), 27th daughter of King Mongkut (Rama IV); she died on 17 Dec 1955 aged 93 years 3 months.

HRH Princess Alice Mary, VA, GCVO, GBE, Countess of Athlone (b. 25 Feb 1883) became the longest ever lived British 'royal' on 15 July 1977 and died aged 97 years 313 days on 3 Jan 1981. She fulfilled 20,000 engagements, including the funerals of five British monarchs.

Youngest King and Queen

Twenty-seven of the world's 168 sovereign states are not republics. They are lead by 1 Emperor, 13 Kings, 3 Queens, 4 princely rulers, a Sultan, 3 Amirs, the Pope and one elected monarch.

Heaviest monarch

The world's heaviest monarch is the 6 ft 3 in 1.90 m tall King Taufa'ahau of Tonga who in Sept 1976 was weighed on the only adequate scales in the country at the airport recording 33 st (462 lb) 209.5 kg.

Most prolific

The most prolific monogamous 'royals' have been Prince Hartmann of Liechtenstein (1613–86) who had 24 children, of whom 21 were live born, by Countess Elisabeth zu Salm-Reiferscheidt (1623–88). HRH Duke Roberto I of Parma also had 24 children but by two wives.

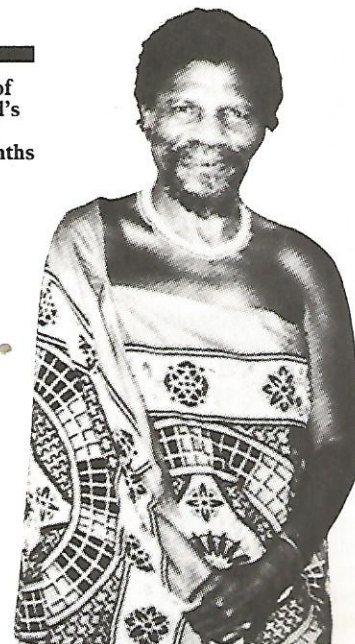
Head of State Oldest and Youngest

The oldest head of state in the world is the President of Italy, Alessandro Pertini (b. 27 Sept 1896). The youngest non-royal head of state is Jean-Claude Duvalier, (b. 3 July 1951) President of Haiti since 21 Apr 1971 when he was 19 years and 10 months.

Earliest Elected Female

President Vigdis Finnbogadóttir (b. 1930) of Iceland became the first democratically elected female head of state on 30 June 1980 and took office on 1 Aug 1980.

King Sobhuza II, GCMG, KBE of Swaziland, currently the world's longest reigning monarch who came to the throne aged 4 months on 10 Dec 1899.



Alert (82° 31' N.), on Dumb Bell Bay, on the north-east coast of Ellesmere Island, northern Canada.

Southernmost

The world's southernmost village is Puerto Williams (population about 350), on the north coast of Isla Navarino, in Tierra del Fuego, Chile, 680 miles 1090 km north of Antarctica. Wellington, the North Island, New Zealand is the southernmost capital city on 41° 17' S. The world's southernmost administrative centre is Port Stanley (51° 43' S.), in the Falkland Islands, off South America.

Most remote from the sea

The largest town most remote from the sea is Wulumuch'i (Urumchi) formerly Tihwa, Sinkiang, capital of the Uighur Autonomous Region of China, at a distance of about 1400 miles 2250 km from the nearest coastline. Its population was estimated to be 320,000 in 1974.

3. LEGISLATURES

PARLIAMENTS—WORLD

Earliest and Oldest

The earliest known legislative assembly was a bicameral one in Erech, Iraq c. 2800 BC. The oldest legislative body is the *Althing* of Iceland founded in AD 930. This body, which originally comprised 39 local chieftains at Thingvellir, was abolished in 1800, but restored by Denmark to a consultative status in 1843 and a legislative status in 1874. The legislative assembly with the oldest continuous history is the Tynwald Court in the Isle of Man, which is believed to have originated more than 1000 years ago.

Largest

The largest legislative assembly in the world is the National People's Congress of the People's Republic of China. The fourth Congress, which was convened in 1979 had 3471 members.

Smallest quorum

The House of Lords has the smallest quorum, expressed as a percentage of eligible voters, of any legislative body in the world, namely less than one-third of 1 per cent. To transact business there must be three peers present, including the Lord Chancellor or his deputy. The House of Commons quorum of 40 MPs, including the Speaker or his deputy, is 20 times as exacting.

Highest paid legislators

The most highly paid of all the world's legislators are Members of the US Congress whose basic annual salary was raised on 12 Oct 1979 to \$60,662.50 (now £33,700). In addition up to \$1,021,167 (£567,000) per annum is allowed for office help, with a salary limit of \$49,941 (now £27,750) for any one staff member (limited to 16 in number). Senators are allowed up to \$143,000 (£79,400) per annum for an official office expense account from which official travel, telegram, long distance telephone, air mail, postage, stationery, subscriptions to newspapers, and office expenses in home state are paid. They also command very low rates for filming, speech and radio transcriptions and, in the case of women senators, beauty treatment. When abroad they have access to 'counterpart funds'. A retiring President electing to take also his congressional pension would enjoy a combined pension of \$103,500 (£57,500) per annum.

Longest membership

The longest span as a legislator was 83 years by József Madarász (1834–1915). He first attended the Hungarian Parliament in 1832–6 as *obligatus absentium* (i.e. on behalf of an absent deputy). He was a full member in 1848–50 and from 1861 until his death on 31 Jan 1915.

Best attendance record

US Congressman William H. Natcher (Democrat) of Bowling Green, Kentucky on 6 Jan 1982 completed 28 years (1954–82) without missing a single vote (3927 quorum calls and 8690 votes) on 15 June 1982. State Representative Lucille H. McCollough was elected to the Michigan House of Representatives on 1 Jan 1955 and had a perfect attendance record into June 1982.

UN Speech Longest

The longest speech made in the United Nations has been one of 4 hr 29 min by President Dr Fidel Castro Ruz (b. 13 Aug 1927) of Cuba on 26 Sept 1960.

Filibusters

The longest continuous speech in the history of the United States Senate was that of Senator Wayne Morse (1900–74) of Oregon on 24–25 Apr 1953, when he spoke on the Tideland Oil Bill for 22 hr 26 min without resuming his seat. Interrupted only briefly by the swearing-in of a new senator, Senator Strom Thurmond (b. 1902) (South Carolina, Democrat) spoke against the Civil Rights Bill for 24 hr 19 min on 28–29 Aug 1957. The United States national record duration for a filibuster is 43 hr by Texas State senator Bill Meier against nondisclosure of industrial accidents in May 1977.

Treaty Oldest

The world's oldest treaty is the Anglo-Portuguese Treaty of Alliance signed in London over 600 years ago on 16 June 1373. The text was confirmed 'with my usual flourish' by John de Banketre, Clerk.

PARLIAMENTS—UNITED KINGDOM

Earliest

The earliest known use of the term 'parliament' in an official English royal document, in the meaning of a summons to the King's (Henry III's) council, dates from 19 Dec 1241.

The Houses of Parliament of the United Kingdom in the Palace of Westminster, London, had 1808 members (House of Lords 1173, House of Commons 635) in June 1982.

Longest

The longest English Parliament was the 'Pensioners' Parliament of Charles II, which lasted from 8 May 1661 to 24 Jan 1679, a period of 17 years 8 months and 16 days. The longest United Kingdom Parliament was that of George V, Edward VIII and George VI, lasting from 26 Nov 1935 to 15 June 1945, a span of 9 years 6 months and 20 days.

Shortest

The parliament of Edward I, summoned to Westminster for 30 May 1306, lasted only 1 day. The parliament of Charles II at Oxford from 21–28 Mar 1681 lasted 7 days. The shortest United Kingdom Parliament was that of George III, lasting from 15 Dec 1806 to 29 Apr 1807, a period of only 4 months and 14 days.

Longest sittings

The longest sitting in the House of Commons was one of 41½ hr from 4 p.m. on 31 Jan 1881 to 9.30 a.m. on 2 Feb 1881, on the question of better Protection of Person and Property in Ireland. The longest sitting of the Lords has been 19 hr 16 min from 2.30 p.m. on 29 Feb to 9.46 a.m. on 1 Mar 1968 on the Commonwealth Immigrants Bill (Committee stage). The longest sitting of a Standing Committee occurred from 10.30 a.m. 11 May to 12.08 p.m. 13 May 1948 when Standing Committee D considered the Gas Bill through two nights for 49 hr 38 min.

Longest speech

The longest recorded continuous speech in the House of Commons was that of Henry Peter Brougham (1778–1868) on 7 Feb 1828, when he spoke for 6 hr on Law Reform. He ended at 10.40 p.m. and the report of this speech occupied 12 columns of the next day's edition of *The Times*. Brougham, created the 1st Lord Brougham and Vaux on 22 Nov 1830, then set the House of Lords record, also with 6 hours on 7 Oct 1831, when speaking on the second reading of the Reform Bill. The longest back bench speech under present, much stricter, Standing Orders has been one of 3 hr 16 min by Sir Bernard Braine (b. 1914) the Conservative member for Essex, South East concerning Canvey Island on 23–24 July 1974.

The longest speech in Stormont, Northern Ireland was one of 9½ hr by Tommy Henderson MP on the Appropriations Bill on 26–27 May 1936.

Greatest parliamentary petition

The greatest petition has been supposed to be the Great Chartist

Legislatures

Petition of 1848 but of the 5,706,000 'signatures' only 1,975,496 were valid. The largest of all time was for the abolition of Entertainment Duty with 3,107,080 signatures presented on 5 June 1951.

Most time consuming legislation

The most profligate use of parliamentary time was on the Government of Ireland Bill of 1893-4, which required 82 days in the House of Commons of which 46 days was in Committee. The record for a standing committee is 58 sessions for the Aircraft and Shipbuilding Industries Bill which was re-presented to the House of Commons on 8 June 1976 after the 303-303 tied vote of 27 May 1976.

Divisions

The record number of divisions in the House of Commons is 64 on 23-24 Mar 1971 including 57 in succession between midnight and noon. The largest division was one of 350-310 on the vote of no confidence on 11 Aug 1892.

ELECTIONS—WORLD

Largest

The largest elections in the world are those for the 529 seat Indian *Lok Sabha* (House of the People). The in-coming Prime Minister Mrs Indira Gandhi was better known by her symbol (a cow) than by name among the 362 million voters.

Closest

The ultimate in close general elections occurred in Zanzibar (now part of Tanzania) on 18 Jan 1961, when the Afro-Shirazi Party won by a single seat, after the seat of Chake-Chake on Pemba Island had been gained by a single vote.

The narrowest recorded percentage win in an election would seem to be for the office of Southern District highway commissioner in Mississippi State, USA on 7 Aug 1979. Robert E. Joiner was declared the winner over W. H. Pyron with 133,587 votes to 133,582. The loser got more than 49.9999% of the votes.

Most one-sided

North Korea recorded a 100 per cent turn-out of electors and a 100 per cent vote for the Worker's Party of Korea in the general election of 8 Oct 1962. The previous record had been set in the Albanian election of 4 June 1962, when all but seven of the electorate of 889,875 went to the polls—a 99.9992 per cent turn-out. Of the 889,868 voters, 889,828 voted for the candidates of the Albanian Party of Labour, i.e. 99.9955 per cent of the total poll.

Most bent

In the Liberian presidential election of 1927 President Charles D. B. King (1875-1961) was returned with a majority over his opponent, Mr Thomas J. R. Faulkner of the People's Party, officially announced as 234,000. President King thus claimed a 'majority' more than 15½ times greater than the entire electorate.

Highest personal majority

The highest ever personal majority by any politician has been 424,545 by Ram Bilas Paswan, 30, the Janata candidate for Hajipur in Bihar, India in March 1977. The electorate was 625,179.

Communist parties

The largest national Communist party outside the Soviet Union (17,000,000 members in 1981) and Communist states has been the Partito Comunista Italiano (Italian Communist Party), with a membership of 2,300,000 in 1946. The total was 1,700,000 in 1976. The membership in mainland China was estimated to be 28,000,000 in 1974.

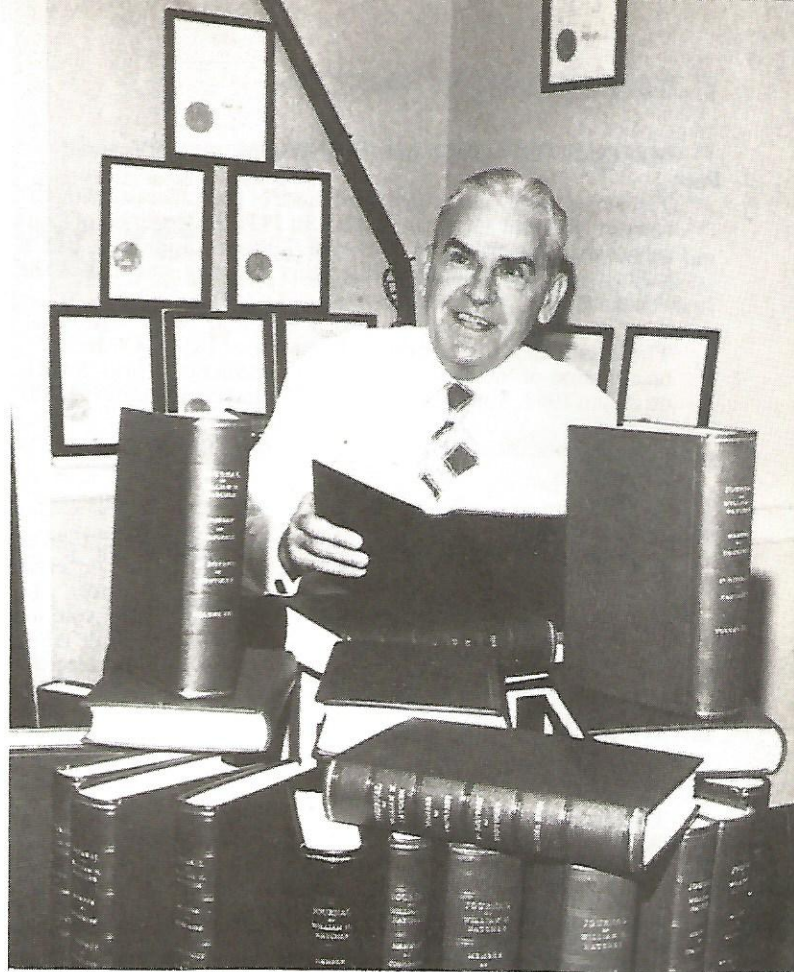
The Communist Party of Great Britain, formed on 31 July 1920 in Cannon Street Station Hotel, London, attained its peak membership of 56,000 in December 1942, compared with 20,599 on 1 Jan 1980.

Voting age Extremes

The eligibility for voting is 15 years of age in the Philippines and 25 years in Andorra.

Most Coups

Statisticians contend Bolivia, since it became a sovereign country in 1825, has had 189 coups.



William Natcher, the democratic congressman of Bowling Green, Kentucky who has completed 28 years without missing a single vote (see p. 208).

PRIME MINISTERS AND STATESMEN—WORLD

Oldest

The longest lived Prime Minister of any country is Christopher Hornsrud, Prime Minister of Norway from 28 Jan to 15 Feb 1928. He was born on 15 Nov 1859 and died on 13 Dec 1960, aged 101 years 28 days. The Hon. Richard Gavin Reid (b. Glasgow 17 Jan 1879), Premier of Alberta, Canada in 1934-35 died on 17 Oct 1980 aged 101 years 274 days.

El Hadji Muhammad el Mokri, Grand Vizier of Morocco, died on 16 Sept 1957, at a reputed age of 116 Muslim (*Hijri*) years, equivalent to 112.5 Gregorian years. The oldest age of appointment has been 81 years in the case of Morarji Ranchhodji Desai of India (b. 29 Feb 1896) in March 1977.

Longest term of office

Prof. Dr António de Oliveira Salazar, GCMG (Hon.) (1889-1970) was the President of the Council of Ministers (i.e. Prime Minister) of Portugal from 5 July 1932 until 27 Sept 1968—36 years 84 days. He was superseded 11 days after going into coma. The longest serving democratically elected premier was Tage Erlander of Sweden for 22 years 357 days from 10 Oct 1946 to 1 Oct 1969.

Andrei Andreevich Gromyko (b. 6 July 1909) has been Minister of Foreign Affairs of the USSR since 15 Feb 1957 having been Deputy Foreign Minister since 1946.

EUROPEAN PARLIAMENTARY ELECTION RECORDS

In the first European Parliamentary elections of 7 June 1979 the highest majority in the 81 constituencies was 95,484 for M. Seligman (Con) in Sussex West. The lowest was 302 for W. Hopper (Con) in Greater Manchester West. The largest and smallest electorates were 575,991 in Wight and Hampshire East and 298,802 in Highlands and Islands. The latter had the highest turn out with 39.4 per cent. The lowest turn out was 20.4 per cent in London North East.

MAJORITIES—UNITED KINGDOM

The largest party majorities were those of the Liberals, with 307 seats in 1832 and 356 seats in 1906. In 1931 the Coalition of Conservatives, Liberals and National Labour candidates had a majority of 491. The narrowest party majority was that of the Whigs in 1847, with a single seat.

The largest majority on a division was one of 463 (464 votes to 1), on a motion of 'no confidence' in the conduct of World War II, on 29 Jan 1942. Since the war the largest has been one of 461 (487 votes to 26) on 10 May 1967, during the debate on the government's application for Britain to join the European Economic Community (the 'Common Market').

Closest personal All-time

The closest result occurred in the General Election of 1886 at Ashton-under-Lyne, Greater Manchester when the Conservative and Liberal candidates both received 3,049 votes. The Returning Officer, Mr James Walker, gave his casting vote for John E. W. Addison (Con), who was duly returned while Alexander B. Rowley (Gladstone-Liberal) was declared unelected. On 13 Oct 1892 there was a by-election at Cirencester, Gloucestershire, which resulted in an election petition after which the number of votes cast for the Conservative and Liberal were found to have been equal. A new election was ordered.

Two examples of majorities of 1 have occurred. At Durham, in the 1895 General Election, Matthew Fowler (Lib) with 1111 votes defeated the Hon. Arthur R. D. Elliott (Liberal-Unionist) (1110 votes) after a recount. At Exeter in the General Election of December 1910 a Liberal victory over the Conservatives by 4 votes was reversed on an election petition to a Conservative win by H. E. Duke KC (later the 1st Lord Merrivale) (Unionist) with 4777 votes to R. H. St Maur's (Lib) 4776 votes.

The smallest majority since 'universal' franchise was by two votes by Abraham John Flint (1903-71), the National Labour candidate at Ilkeston, Derbyshire, in the 1931 General Election. He received 17,587 votes, compared with 17,585 for G. H. Oliver, DCM (Lab).

Highest poll

The highest poll in any constituency since 'universal' franchise was 95.42 per cent in Fermanagh and South Tyrone, Northern Ireland, at the General Election of 25 Oct 1951, when there were 62,798 voters from an electorate of 67,219. The Anti-Partition candidate, Mr Cahir Healy (1877-1970), was elected with a majority of 2635 votes. The highest poll in any constituency in the May 1979 General Election was 86.97 per cent in Fermanagh and South Tyrone. The highest figure in Great Britain was 86.08 per cent in Cornwall North and the lowest in Chelsea with 57.30 per cent.

HOUSE OF LORDS

Oldest member

The oldest member ever was the Rt Hon the 5th Baron Penrhyn, who was born on 21 Nov 1865 and died on 3 Feb 1967, aged 101 years 74 days. The oldest now is the Rt Hon Hugh O'Neill, Bt, 1st Baron Rathcavan (b. 18 June 1883), who fought the 1906 election. The oldest peer to make a maiden speech was Lord Nueman (1854-1951) aged 94 years 123 days (see Oldest creation, page 201).

Youngest member

The youngest present member of the House of Lords has been HRH the Prince Charles Philip Arthur George, KG, KT, GCB, the Prince of Wales (b. 14 Nov 1948). All Dukes of Cornwall, of whom Prince Charles is the 24th, are technically eligible to sit, regardless of age—in his case from his succession on 6 Feb 1952, aged 3. The 20th and 21st holders, later King George IV (b. 1762) and King Edward VII (b. 1841), were technically entitled to sit from birth. The youngest creation of a life peer or peeress under the Peerage Act 1958 has been that of Lady Masham (b. 14 Apr 1935) who was created Baroness Masham of Ilton at the age of 34 years 262 days.

The first woman to address the House was Mrs Elizabeth Robinson *née* Hastings (1695-1779) from Gibraltar to give testimony about slave trafficking.

POLITICAL OFFICE HOLDERS

Premiership Longest term

No United Kingdom Prime Minister has yet matched in duration the continuous term of office of Great Britain's first Prime Minister the Rt Hon Sir Robert Walpole, KG, later the 1st Earl of Orford (1676-1745), First Lord of the Treasury and Chancellor of the Exchequer for 20 years 326 days from 3 Apr 1721 to 12 Feb 1742. The office was not, however, formally recognised until 1905, since when the longest tenure has been that of Herbert Henry Asquith, later the 1st Earl of Oxford and Asquith (b. 1852-1928), with 8 years 243 days from 8 Apr 1908 to 7 Dec 1916. This was 7 days longer than the three terms of Sir Winston Churchill, between 1940 and 1955.

Shortest term

The Rt Hon William Pulteney, the Earl of Bath (1684-1764) held office for 3 days, 10-12 Feb 1746, but was unable to form a ministry. The shortest term of any ministry was that of the 1st Duke of Wellington, KG, GCB, GCH, (1769-1852), whose third ministry survived only 22 days from 17 Nov to 9 Dec 1834.

Most times

The only Prime Minister to have accepted office five times was the Rt Hon Stanley Baldwin, later the 1st Earl Baldwin of Bewdley KG, (1867-1947). His ministries were those of 22 May 1923 to 22 Jan 1924, 4 Nov 1924 to 5 June 1929, 7 June 1935 to 21 Jan 1936, from then until the abdication of 12 Dec 1936 and from then until 28 May 1937.

Longest lived

The longest lived Prime Minister of the United Kingdom has been the Rt Hon Sir Winston Leonard Spencer-Churchill, KG, OM, CH, TD, (b. 30 Nov 1874), who surpassed the age of the Rt Hon William Ewart Gladstone (1809-98) on 21 Apr 1963 and died on 24 Jan 1965, aged 90 years 55 days. Gladstone's last day in office on 3 Mar 1894 was when he was 84 years 64 days—having been elected on 18 Aug 1892.

Youngest

The youngest of Great Britain's 51 Prime Ministers has been the Rt Hon the Hon William Pitt (b. 28 May 1759), who accepted the King's invitation to be First Lord of the Treasury on 19 Dec 1783, aged 24 years 205 days. He had previously declined on 27 Feb 1783, when aged 23 years 275 days.

BRITISH AND IRISH LARGEST AND SMALLEST PRIMARY LOCAL GOVERNMENT AREAS
Area and population

By Area (in acres/hectares)				By Home/Population			
Largest		Smallest		Most Populous		Least Populous	
North Yorkshire	2,053,067	Isles of Scilly	4,040	Greater London	6,696,008	Isles of Scilly	2,628
Dyfed	1,425,226	South Glamorgan	102,868	Mid Glamorgan	537,866 ¹	Powys	110,467
Highland ²	6,274,171	Orkney	241,120	Strathclyde ⁴	2,397,827	Orkney	18,906
Tyrone	779,520	Castlereagh	20,954	Belfast City	345,800	Moyle	13,700
Cork	1,843,341	Louth	202,797	Dublin County	1,001,985	Litrim	27,607

¹most populous town in Wales—the City of Cardiff (pop. 273,525)—is in South Glamorgan. The most populous place in England outside Greater London is Birmingham (pop. 920,389).

²North's 20 Councils were replaced on 16 May 1975 by nine regions and three Island Areas.

³replaced by Act of Parliament on 10 Feb 1972 of Rockall in the District of Harris in Western Isles put the extremities of that Authority at the record distance apart of 302 miles 486 km.

⁴the most populous town in Scotland—the City of Glasgow (pop. 763,162).

Chancellorship *Longest and shortest tenures*

The Rt Hon Sir Robert Walpole, KG, later the 1st Earl of Orford (1676–1745), served 22 years 5 months as Chancellor of the Exchequer, holding office continuously from 12 Oct 1715 to 12 Feb 1742, except for the period from 16 Apr 1717 to 2 Apr 1721. The briefest tenure of this office was 26 days in the case of the Baron (later the 1st Earl of) Mansfield (1705–93), from 11 Sept to 6 Oct 1767. The only man with four terms in this office was the Rt Hon William Ewart Gladstone (1809–98) in 1852–5, 1859–66, 1873–4 and 1880–2.

Foreign Secretaryship *Longest tenures*

The longest continuous term of office of any Foreign Secretary has been the 10 years 360 days of Sir Edward Grey KG, MP (later Viscount Grey of Fallodon) from 10 Dec 1905 to 5 Dec 1916. The Most Hon Robert Arthur Talbot Gascoyne-Cecil, Marquis of Salisbury, KG, GCVO, in two spells in 1887–92 and 1895–1900 aggregated 11 years 87 days in this office.

Colonial Secretaryship *Longest tenures*

The longest term of office has been 19 years 324 days by the Rt Hon Henry Bathurst, Earl Bathurst (1762–1834), who was Secretary of State for the Colonial and War Department from 11 June 1812 to 1 May 1827. The longest tenure this century has been the 5 years 78 days of the Rt Hon Alan Tindal Lennox-

Boyd, Viscount Boyd of Merton, CH (b. 18 Nov 1904) from 28 July 1954 to 13 Oct 1959.

Speakership *Longest*

Arthur Onslow (1691–1768) was elected Mr Speaker on 23 Jan 1728, at the age of 36. He held the position for 33 years 43 days, until 18 Mar 1761 allowing for the 'lost' 11 days (3–13 Sept 1752).

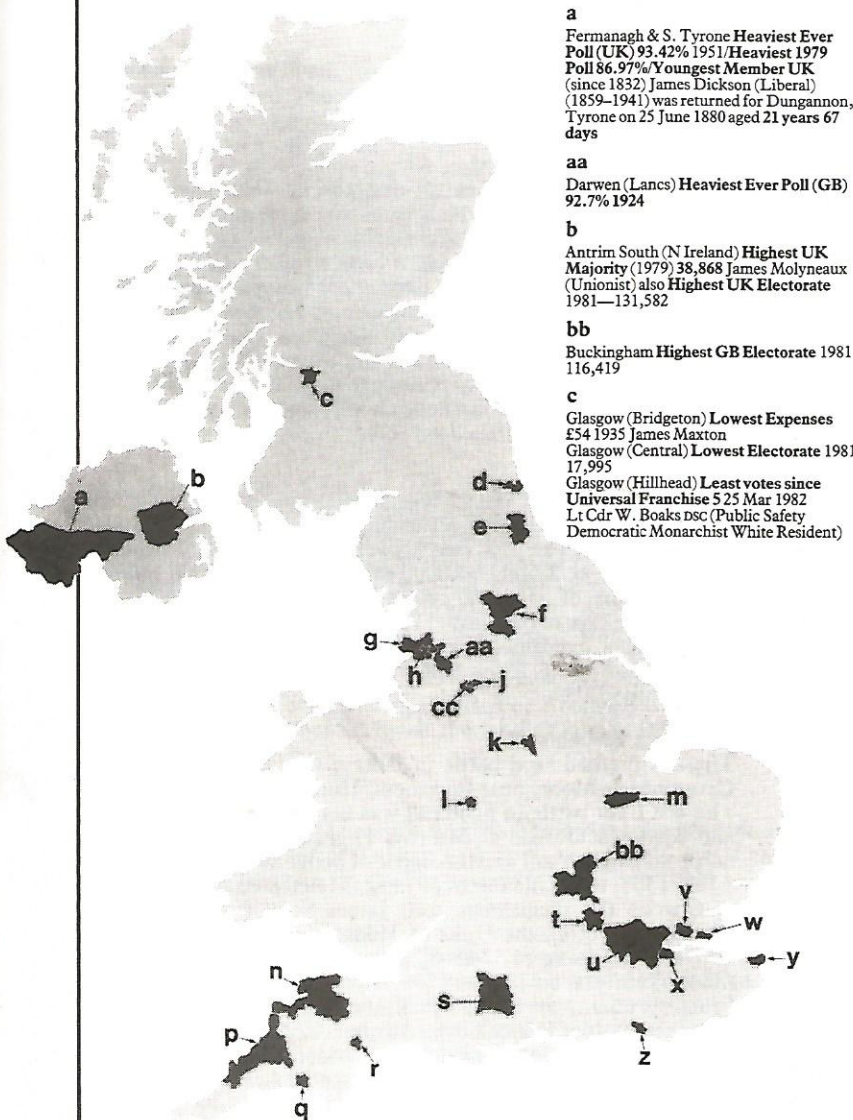
MPs *Youngest*

Edmund Waller (1606–87) sat as the Member of Parliament for Amersham, Buckinghamshire, during the Parliament of 16 Jan 1621, which met before he was 15, though he himself said he did not sit till he was 16. He was indisputedly MP for Ilchester, Somerset from 12 Feb 1624 aged 17 years 11 months. In 1435 Henry Long (1420–90) was returned for an Old Sarum seat also at the age of 15. His precise date of birth is unknown. Minors were debarred in law in 1695 and in fact in 1832. The youngest MP is Stephen James Dorrell (Con.) MP for Loughborough (b. 25 Mar 1952).

Oldest

The oldest of all members was Samuel Young (b. 14 Feb 1822), Nationalist MP for East Cavan (1892–1918), who died on 18 Apr 1918, aged 96 years 63 days. The oldest 'Father of the House' in

map of British Electoral Records



a
Fermanagh & S. Tyrone Heaviest Ever Poll (UK) 93.42% 1951/Heaviest 1979 Poll 86.97%/Youngest Member UK (since 1832) James Dickson (Liberal) (1859–1941) was returned for Dungannon, Tyrone on 25 June 1880 aged 21 years 67 days

aa
Darwen (Lancs) Heaviest Ever Poll (GB) 92.7% 1924

b
Antrim South (N Ireland) Highest UK Majority (1979) 38,868 James Molyneux (Unionist) also Highest UK Electorate 1981—131,582

bb
Buckingham Highest GB Electorate 1981 116,419

c
Glasgow (Bridgeton) Lowest Expenses £54 1935 James Maxton
Glasgow (Central) Lowest Electorate 1981 17,995
Glasgow (Hillhead) Least votes since Universal Franchise 5 25 Mar 1982 Lt Cdr W. Boaks DSC (Public Safety Democratic Monarchist White Resident)

cc
Manchester Central Lowest General Election Vote (since Universal Franchise) 12 by Lt Cdr W. G. Boaks

d
Wallsend-Tynemouth Longest Serving Woman MP 1931–74 Dame Irene Ward

e
Durham Narrowest Majorities by Matthew Fowler (Liberal) 1895 by 1 vote (Recount majority 3)

f
Ripon Lowest Vote Nil in 1860 F. R. Lees (Temperance)

g
Fylde South (Lancs) Highest GB Majority (1979) 32,247 Edward Gardner (Conservative)

h
Preston North Narrowest Majority (1979) 29 by Robert Atkins (Conservative)

i
Ashton-Under-Lyne (Greater Manchester) Dead-Heat Returning Officer declared dead heat (1886) and gave casting vote to J. E. W. Addison (Con)

k
Ilkestone (Derbyshire) Narrowest Majority Since Universal Franchise A. J. Flint (National Labour) by 2 votes 1931

l
Wolverhampton South Oldest Father of the House 96 years C. P. Villiers (Con) in 1898

m
Peterborough Most Recounts 7 1966

n (see also z)
Devon North Most General Election Candidates 9 at 3 May 1979 General Election in which the total of 2,571 candidates was a record

p
Cornwall North Heaviest 1979 Poll (GB) 86.08%

q
Plymouth First Woman MP to take seat 1919 Nancy Astor

r
Exeter Narrowest Majorities 1 (by H. E. Duke (Unionist) Dec 1910 by 1 vote

s
Old Sarum (Wiltshire) No elections contested 1295–1831 8 Electors for 2 unopposed members. 1821

t
Amersham (Bucks) Youngest Ever MP Aged 15/16 Edmund Waller 1621

u
Chelsea (London) Lowest 1979 Poll 57.30%
Hendon (Barnet) Largest Ever Electorate (in 1941) 217,900
Kennington (London) Lowest Poll 29.7% 1918
South Poplar (London) Lowest By Election Poll 9.3% Aug 1942
City of London Smallest Electorate 10,851 1945
Croydon (North West) Most Candidates 12 (By election) 22 Oct 1981

v
Billerica (Essex) Fastest Ever Result 9.57pm 1959

w
Southend (Essex) Highest Majority by a Woman 38,823 Countess of Iveagh (Conservative) 1931

x
Dartford (Kent) Greatest Swing 38.7% 1920 (By election)

y
Isle of Thanet (Kent) Youngest MP (for GB seat since 1832) 21½ years Hon Esmond Harmsworth

z
Brighton (Sussex) Highest ever Majority 62,253 Sir Cooper Rawson (Conservative) 1931 and Most Votes 75,205
Brighton (Kemptown) Most Recounts 7 1964 (see also m)

Lt Cdr W. Boaks (see 1st column, c). (*Daily Telegraph*)



Parliamentary history was the Rt Hon Charles Pelham Villiers (b. 3 Jan 1802), who was the member for Wolverhampton when he died on 16 Jan 1898, aged 96 years 13 days. He was a Member of Parliament for 63 years 6 days, having been returned at 17 elections. The oldest member is Robert Edwards MP (Lab) for Wolverhampton South East (b. 16 Jan 1905).

Longest span

The longest span of service of any MP is 63 years 10 months (1 Oct 1900 to 25 Sept 1964) by the Rt Hon Sir Winston Leonard Spencer-Churchill, KG, OM, CH, TD (1874–1965), with breaks only in 1908 and 1922–24. The longest unbroken span was that of C. P. Villiers (see above). The longest span in the Palace of Westminster (both Houses of Parliament) has been 73 years by the 10th Earl of Wemyss and March GVO, who, as Sir Francis Wemyss-Charteris-Douglas, served as MP for East Gloucestershire (1841–6) and Haddingtonshire (1847–83) and then took his seat in the House of Lords, dying on 30 June 1914, aged 95 years 330 days.

Women MPs Earliest

The first woman to be elected to the House of Commons was Mme. Constance Georgine Markiewicz (*née* Gore Booth). She was elected as member (Sinn Féin) for St Patrick's Dublin, in December 1918. The first woman to take her seat was the Viscountess Astor, CH (1879–1964) (b. Nancy Witcher Langhorne at Danville, Virginia, USA; formerly Mrs Robert Gould Shaw), who was elected* Unionist member for the Sutton Division of Plymouth, Devon, on 28 Nov 1919, and took her seat three days later. The first woman to take her seat from the island of Ireland was Lady Fisher *née* Patricia Smiles as unopposed Ulster Unionist for North Down in April 1953 as Mrs Patricia Ford.

Longest serving

The longest ever serving woman MP has been Baroness Irene Mary Bewick Ward CH, DBE (d. 1980), who fought all 12 General Elections (1924–70) and who served as member for Wallsend (1931–45) and for Tynemouth (1950–74). She shared also the 20th century record for introducing 4 Private Members Bills which became Acts with Sir Robert Gower (1880–1953).

Heaviest and Tallest

The heaviest MP of all-time is believed to have been Cyril Smith *was*, Liberal member for Rochdale since October 1972, when in January 1976 his peak reported weight was 29 st 12 lb 189.60 kg. Sir Louis Gluckstein GBE, TD, QC (1897–1979), who served for East Nottingham (1931–45), was an unrivalled 6 ft 7 in 2.02 m. Currently the tallest is the Hon. Archie Hamilton member for Epsom and Ewell at 6 ft 6 in 1.98 m.

Mayoralties

The longest recorded mayoralty was that of Edmond Mathis (1852–1953) *maire* of Ehuns, Haute-Saône, France for 75 years (1878–1953). The longest established mayoralty in Britain is that of the City of London dating from 1192 with the 20 year term of Henry Fitz Ailwyn till 1212. The most elections, since these became annual in 1215, has been 8 by Gregory de Rokesley (1274/5 to 1280/1). Alderman G. T. Paine served as Mayor of Lydd, Kent for 29 consecutive years in 1931 to 1961.

Local Government Service Duration Records

Henry Winn (1816–1914) served as parish clerk for Fulletby near Horncastle, Lincolnshire for 76 years.

Weight of Legislation

The greatest amount of legislation in a year has been 11,453 pages (83 Public general acts and 2251 Statutory Instruments) in 1975. This compares with 46 Acts and 1130 Instruments of 1998 pages in 1928. Most Acts were 123 in 1939 and fewest 39 in 1929 and 1942. The peak for Statutory Instruments was 2916 in 1947.

4. MILITARY AND DEFENCE

WAR

The longest of history's countless wars was the 'Hundred Years

War' between England and France, which lasted from 1338 to 1453 (115 years), although it may be said that the nine Crusades from the First (1096–1104) to the Ninth (1270–91), extending over 195 years comprised a single Holy War.

Shortest

The shortest war on record was that between the United Kingdom and Zanzibar (now part of Tanzania) from 9.02 to 9.40 a.m. on 27 Aug 1896. The UK battle fleet under Rear-Admiral (later Admiral Sir) Harry Holdsworth Rawson (1843–1910) delivered an ultimatum to the self-appointed Sultan Sa'ïd Khalid to evacuate his palace and surrender. This was not forthcoming until after 38 minutes of bombardment. Admiral Rawson received the Brilliant Star of Zanzibar (first class) from the new Sultan Hamud ibn Muhammad. It was proposed at one time that elements of the local populace should be compelled to defray the cost of the ammunition used.

Bloodiest

By far the most costly war in terms of human life was World War II (1939–45), in which the total number of fatalities, including battle deaths and civilians of all countries, is estimated to have been 54,800,000 assuming 25 million USSR fatalities and 7,800,000 Chinese civilians killed. The country which suffered most was Poland with 6,028,000 or 22.2 per cent of her population of 27,007,000 killed. The total combatant death roll from World War I was 9,700,000 compared with the 15,600,000 of World War II.

In the case of the United Kingdom, however, the heaviest armed forces fatalities occurred in World War I (1914–18), with 765,399 killed out of 5,500,000 engaged (13.9 per cent), compared with 265,000 out of 5,896,000 engaged (4.49 per cent) in World War II.

In the Paraguayan war of 1864–70 against Brazil, Argentina and Uruguay, their population was reduced from 1,400,000 to 220,000 of whom only 30,000 were adult males.

Bloodiest civil

The bloodiest civil war in history was the T'ai-p'ing ('Great Peace') rebellion, in which peasant sympathizers of the Southern Ming dynasty fought the Manchu Government troops in China from 1851 to 1864. The rebellion was led by the deranged Hung Hsiu-ch'üan (executed) who imagined himself to be a younger brother of Jesus Christ. His force was named *T'ai-p'ing T'ien Kuo* (Heavenly Kingdom of Great Peace). According to the best estimates, the loss of life was between 20,000,000 and 30,000,000 including more than 100,000 killed by Government forces in the sack of Nanking on 19–21 July 1864.

Most costly

The material cost of World War II far transcended that of the rest of history's wars put together and has been estimated at \$1.5 million million. The total cost to the Soviet Union was estimated in May 1959 at 2,500,000,000,000 roubles (£100,000 million) while a figure of \$530,000 million has been estimated for the USA. In the case of the United Kingdom the cost of £34,423 million was over five times as great as that of World War I (£6700 million) and 158.6 times that of the Boer War of 1899–1902 (£217 million).

Last battle on British soil

The last pitched land battle in Britain was at Culloden Field, Drummoissie Moor, near Inverness, Highland, on 16 Apr 1746. The last Clan battle in Scotland was between Clan Mackintosh and Clan MacDonald at Mulroy, Highland in 1689. The last battle on English soil was the Battle of Sedgemoor, Somerset, on 6 July 1685, when the forces of James II defeated the supporters of Charles II's illegitimate son, James Scott (formerly called Fitzroy or Crofts), the Duke of Monmouth (1649–85). During the Jacobite rising of 1745–6, there was a skirmish at Clifton Moor, Cumbria, on 18 Dec 1745, when the British forces under Prince William, the Duke of Cumberland (1721–65), brushed with the rebels of Prince Edward Stuart (1720–88) with about 12 killed on the King's side and 5 Highlanders. This was a tactical victory for the Scots under Lord George Murray.

Bloodiest battle Modern

The battle with the greatest recorded number of casualties was

the First Battle of the Somme, France from 1 July to 19 Nov 1916, with 1,043,896—Allied 623,907 (of which 419,654 were British) and 419,989 German. The published German figure of c. 670,000 is not now accepted. The gunfire was heard on Hampstead Heath, London. The greatest battle of World War II and the greatest ever conflict of armour was the Battle of Kursk and Oryol which raged for 50 days on 5 July–23 Aug 1943 on the Eastern front, which involved 1,300,000 Red Army troops with 3600 tanks, 20,000 guns and 3130 aircraft in repelling a German Army Group which had 2700 tanks. The final investment of Berlin by the Red Army on 16 Apr–2 May 1945 involved 3,500,000 men; 52,000 guns and mortars; 7750 tanks and 11,000 aircraft on both sides.

Ancient

Modern historians give no credence, on logistic grounds, to the casualty figures attached to ancient battles, such as the 250,000 reputedly killed at Plataea (Greeks *v* Persians) in 479 BC or the 200,000 allegedly killed in a single day.

British

The bloodiest battle fought on British soil was the Battle of Towton, in North Yorkshire, on 29 Mar 1461, when 36,000 Yorkists defeated 40,000 Lancastrians. The total loss has been estimated at between 28,000 and 38,000 killed. A figure of 80,000 British dead was attributed by Tacitus to the battle of AD 61 between Queen Boudicca (Boadicea) of the Iceni and the Roman Governor of Britain Suetonius Paulinus, for the reputed loss of only 400 Romans in an army of 10,000. The site of the battle is unknown but may have been near Borough Hill, Daventry, Northamptonshire, or more probably near Hampstead Heath, Greater London. Prior to this battle the Romans had lost up to 70,000 in Colchester and London.

Greatest naval battle

The greatest number of ships and aircraft ever involved in a sea-air action was 231 ships and 1996 aircraft in the Battle of Leyte Gulf, in the Philippines. It raged from 22 to 27 Oct 1944, with 166 Allied and 65 Japanese warships engaged, of which 26 Japanese and 6 US ships were sunk. In addition 1280 US and 716 Japanese aircraft were engaged. The greatest naval battle of modern times was the Battle of Jutland on 31 May 1916, in which 151 Royal Navy warships were involved against 101 German warships. The Royal Navy lost 14 ships and 6097 men and the German fleet 11 ships and 2545 men. The greatest of ancient naval battles was the Battle of Salamis, Greece on 23 Sept 480 BC. There were an estimated 800 vessels in the defeated Persian fleet and 310 in the victorious Greek fleet with a possible involvement of 190,000 men. The death roll at the Battle of Lepanto on 7 Oct 1571 has been estimated at 33,000.

Invasion Greatest Seaborne

The greatest invasion in military history was the Allied land, air and sea operation against the Normandy coasts of France on D-day, 6 June 1944. Thirty-eight convoys of 745 ships moved in on the first three days, supported by 4066 landing craft, carrying 185,000 men and 20,000 vehicles, and 347 minesweepers. The air assault comprised 18,000 paratroopers from 1087 aircraft. The 42 available divisions possessed an air support from 13,175 aircraft. Within a month 1,100,000 troops, 200,000 vehicles and 750,000 tons of stores were landed. The Allied invasion of Sicily on 10–12 July 1943 involved the landing of 181,000 men in 3 days.

Airborne

The largest airborne invasion was the Anglo-American assault of three divisions (34,000 men), with 2800 aircraft and 1,600 gliders, near Arnhem, in the Netherlands, on 17 Sept 1944.

Last on the soil of Great Britain

The last invasion of Great Britain occurred on 12 Feb 1797, when the Irish-American adventurer General Tate landed at Carreg Gwastad with 1400 French troops. They surrendered near Fishguard, Dyfed, to Lord Cawdor's force of the Castle-martin Yeomanry and some local inhabitants armed with pitchforks. The UK Crown Dependency of the Channel Islands were occupied by German armed forces from 30 June 1940 to 9 May 1945 when Vice Admiral Huffmeier signed the instrument of surrender.

Greatest evacuation

The greatest evacuation in military history was that carried out by 1200 Allied naval and civil craft from the beach-head at Dunkerque (Dunkirk), France, between 27 May and 4 June 1940. A total of 338,226 British and French troops were taken off.

Worst sieges

The worst siege in history was the 880-day siege of Leningrad, USSR by the German Army from 30 Aug 1941 until 27 Jan 1944. The best estimate is that between 1.3 and 1.5 million defenders and citizens died. The longest recorded siege was that of Azotus (now Ashdod), Israel which according to Herodotus was invested by Psamtik I of Egypt for 29 years in the period 664–610 BC.

Longest Range Attack

The longest range attack in aviation history was from Ascension Island to Port Stanley, Falkland Is. by a refuelled RAF Vulcan bomber in a round trip of more than 8000 miles 12 875 km.

DEFENCE

The estimated level of spending on armaments throughout the world in 1981 was \$640,000 million £355,000 million. This represents £79 per person per annum, or 9 per cent of the world's total production of goods and services. It was estimated in 1981 that there were 23.2 million full-time armed force regulars or conscripts.

The budgeted expenditure on defence by the US government for the year ending 30 June 1982 was \$171,023 million (£95,000 million) or 5.7 per cent of the country's Gross National Product. For the Financial Year 1982 this was raised to \$185.8 billion (£83,000 million).

The defence burden on the USSR has been variously estimated as a percentage of GNP to be >15% (by China), up to 14% by Britain and up to 13% by the CIA and thus may be nearly treble that of the US.

The best estimates for late 1981 suggest the US has 9750 nuclear warheads equivalent to 3400 megatonnes with 1052 Inter-Continental launchers while the USSR has 8260 warheads capable of delivering 4150 megatonnes of TNT equivalent and 1398 ICBMs.

ARMED FORCES

Largest

Numerically the largest regular armed force in the world is that of the People's Republic of China with 4,750,000. Her paramilitary forces of armed and unarmed militias have been estimated also by the Institute of Strategic Studies at 12 million plus. Their mid-1981 estimates for the world's two principal military powers are USSR (3,673,000) and USA (2,049,000).

Navies Largest

The largest navy in the world in terms of manpower is the United States Navy, with a manpower of 528,000 and 188,100 Marines in mid-1981. The active strength in 1981 included 14 aircraft carriers, 36 strategic missile submarines, 79 attack nuclear submarines and 5 diesel attack submarines, 73 guided missile warships (25 cruisers, 82 destroyers and 20 frigates) and 67 amphibious warfare ships. The USSR navy has a larger submarine fleet of 427 boats with 115 in reserve. Offensive strategic nuclear weapons are carried by 168 of which all but 15 are also nuclear-powered. It has 2 aircraft carriers, 39 cruisers and 73 destroyers.

The strength of the Royal Navy in mid-1982 included 4 nuclear submarines with strategic atomic missiles, 12 other nuclear and 16 diesel attack submarines and 2 anti-submarine commando carriers, a helicopter cruiser, 12 guided weapon destroyers, and 45 frigates. The uniformed strength was 74,687 including Fleet Air Arm and Royal Marines in mid-1981. In 1914 the Royal

Guinness Superlatives Ltd. has published specialist volumes entitled *The Guinness History of Land Warfare* (£4.95) by Kenneth Macksey, *History of Sea Warfare* (£4.95) by Gervis Frere-Cook and Macksey, and *History of Air Warfare* (£6.50) by David Brown, Christopher Shores and Macksey. Note Guinness Superlatives Ltd. has published a specialist volume entitled *The Guinness Book of Tank Facts and Feats* (3rd edition) by Kenneth Macksey (£7.95). This work deals with all the aspects of the development and history of the tank and other armoured fighting vehicles in greater detail.

Navy had 542 warships including 72 capital ships with 16 building.

Admiral Longest serving

Admiral of the Fleet Sir Provo Wallis GCB (1791-1892) first served on *HMS Cleopatra* in Oct 1804. Because of his service on *HMS Cleopatra* in 1805 against the French he was kept on the active list in 1870 for life. He thus was 87 years 4 months on paid active service though he was earlier on the books as a volunteer from 1795-1804 for a further 9 years—a system by which even infants could gain seniority on joining.

Armies Oldest

The oldest army in the world is the 83-strong Swiss Guard in the Vatican City, with a regular foundation dating back to 21 Jan 1506. Its origins, however, extend back before 1400.

Largest

Numerically, the world's largest army is that of the People's Republic of China, with a total strength of some 3,600,000 in mid-1980. The total size of the USSR's army in mid-1980 was estimated by The International Institute of Strategic Studies at 1,825,000 men, believed to be organised into 173 divisions. The strength of the British Army was 167,250 in mid-1980. The NATO agreement requires not less than 55,000 in West Germany. The basic strength maintained in Northern Ireland is 14,500 but this fluctuates.

Oldest soldiers

The oldest old soldier of all time was probably John B. Salling of the army of the Confederate States of America and the last accepted survivor of the US Civil War (1861-5). He died in Kingsport, Tennessee, USA on 16 Mar 1959, aged 113 years 1 day. The oldest Chelsea pensioner, based only on the evidence of his tombstone, was the 111-year-old William Hiseland (b. 6 Aug 1620, d. 7 Feb 1732). The longest serving British soldier has been Field Marshal Sir William Maynard Gomm GCB (1784-1875), who was an ensign in 1794 and the Constable of the Tower to his death aged 91. The United States longest serving officer was General of the Army, Omar Nelson Bradley (1893-1981) who served 69 years.

Youngest soldiers

Dr Kenneth Vernon Bailey MC (b. 14 Dec 1897) served as a 2nd Lieutenant in the 2/8th Bn Manchester Regt. for some 6 weeks before his 17th birthday. Probably the youngest enlistment in the 20th century was of William Frederick Price, (b. 1 June 1891), who was enlisted into the Army at Aldershot on 23 May 1903, aged 11 years 356 days.

Youngest conscripts

President Francisco Macias Nguema of Equatorial Guinea decreed in March 1976 compulsory military service for all boys between 7 and 14. Any parent refusing to hand over his or her son 'will be imprisoned or shot'.

Tallest soldiers

The tallest soldier of all time was Väinö Myllyrinne (1909-63) who was inducted into the Finnish Army when he was 7 ft 3 in 2.21 m and later grew to 8 ft 1 1/4 in 2.47 m. The British Army's tallest soldier was Benjamin Crow who was signed on at Lichfield in November 1947 when he was 7 ft 1 in 2.15 m tall. Edward Evans (1924-58), who later grew to 7 ft 8 1/2 in 2.35 m was in the Army when he was 6 ft 10 in 2.08 m.

British regimental records

The oldest regular regiment in the British Army is the Royal Scots, raised in French service in 1633, though the Buffs (Royal East Kent Regiment) can trace back their origin to independent companies in Dutch pay as early as 1572. The Coldstream Guards, raised in 1650, were, however, placed on the establishment of the British Army before the Royal Scots and the Buffs. The oldest armed body in the United Kingdom is the Queen's Bodyguard of the Yeoman of the Guard formed in 1495. The Honourable Artillery Company, formed from the Fraternity of St. George, Southwark, received its charter from Henry VIII in 1537 but this lapsed until re-formed in 1610. The infantry regiment with most battle honours is The Queen's Lancashire Regiment with 188.

The most senior regiment of the Reserve Army is The Royal Monmouthshire Royal Engineers (Militia) formed on 21 Mar

1577 and never disbanded, with battle honours at Dunkirk, 1940 and Normandy, 1944.

Greatest mutiny

In the 1914-18 War 56 French divisions comprising some 650,000 men and their officers refused orders on the Western Front sector of General Nivelle in April 1917 after the failure of his offensive.

Longest march

The longest march in military history was the famous Long March by the Chinese Communists in 1934-5. In 368 days, of which 268 days were of movement, from October to October, their force of 90,000 covered 6000 miles 9650 km from Kiangsi to Yen-an in Shensi via Yunnan. They crossed 18 mountain ranges and six major rivers and lost all but 22,000 of their force in continual rear-guard actions against Nationalist Kuo-min-tang (KMT) forces.

On the night of 12-13 Sept 1944 a team of nine from B Company 4th Infantry Battalion of the Irish Army made a night march of 42 miles 67.59 km in full battle order carrying 40 lb 18,1 kg in 11 hr 49 min.

Air Forces Oldest

The earliest autonomous air force is the Royal Air Force whose origin began with the Royal Flying Corps (created 13 May 1912); the Air Battalion of the Royal Engineers (1 Apr 1911) and the Corps of Royal Engineers Balloon Section (1878) which was first operational in Botswana (then Bechuanaland) in 1884. The Prussian Army used a balloon near Strasbourg, France as early as 24 Sept 1870.

Largest

The greatest Air Force of all time was the United States Army Air Force (now called the US Air Force), which had 79,908 aircraft in July 1944 and 2,411,294 personnel in March 1944. The US Air Force including strategic air forces had 555,100 personnel and 3700 combat aircraft in mid-1980. The USSR Air Force, including Air Defence Forces, with about 1,070,000 men in mid-1980, had 5850 combat aircraft. In addition, the USSR's Offensive Strategic Rocket Forces had about 385,000 operational personnel in mid-1980. The strength of the Royal Air Force was 89,714 with 713 combat aircraft in mid-1980.

BOMBS

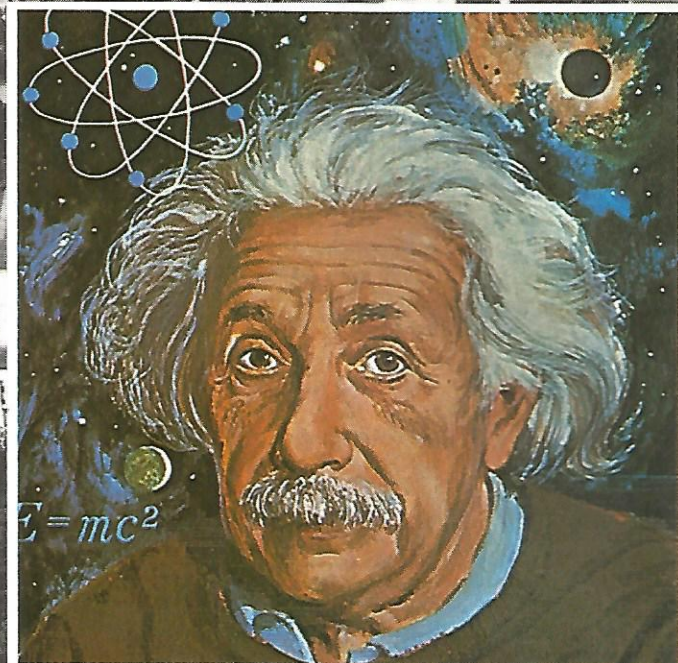
Heaviest

The heaviest conventional bomb ever used operationally was the Royal Air Force's 'Grand Slam', weighing 22,000 lb 9975 kg and measuring 25 ft 5 in 7.74 m long, dropped on Bielefeld railway viaduct, Germany, on 14 Mar 1945. In 1949 the United States Air Force tested a bomb weighing 42,000 lb 19 050 kg at Muroc Dry Lake, California, USA.

Atomic

The two atom bombs dropped on Japan by the United States in 1945 each had an explosive power equivalent to that of 20,000 short tons 20 kilotons of trinitrotoluene (C₇H₅O₆N₃), called TNT. The one dropped on Hiroshima, code-named 'Little Boy', was 10 ft 3.04 m long and weighed 9000 lb 4080 kg. The most powerful thermo-nuclear device so far tested is one with a power equivalent to 57,000,000 short tons of TNT, or 57 megatons, detonated by the USSR in the Novaya Zemlya area at 8.33 a.m. GMT on 30 Oct 1961. The shock wave was detected to have circled the world three times, taking 36 hr 27 min for the first circuit. Some estimates put the power of this device at between 62 and 90 megatons. The largest US H-Bomb tested was the 15 megaton 'Bravo' at Bikini Atoll on 1 Mar 1954. On 9 Aug 1961, Nikita Khrushchov, then the Chairman of the Council of Ministers of the USSR, declared that the Soviet Union was capable of constructing a 100-megaton bomb, and announced the possession of one in East Berlin, Germany, on 16 Jan 1963. Such a device could make a crater in rock 355 ft 107 m deep and 1.8 miles 2.9 km wide and a fireball 46,000 ft or 8.7 miles 13.9 km in diameter.

Atom bomb theory began with Einstein's publication of the E = mc² formula in *Annalen der Physik* in Leipzig on 14 May 1907. It became a practicality with the mesothorium experiments of Otto Hahn, Fritz Strassman and Lise Meitner on 17 Dec 1938. Work started in the USSR on atomic bombs in June 1942 although



above: 'The Equation that Changed the World' Einstein's (inset) most famous formula $E = mc^2$ as spelled out 72 years after publication by 1500 children from the Shenandoah Junior High School, Miami, Florida USA. (Justo L. Alfonso: Miami Fire Dept)

right: The concluding page of the world's most profound scientific paper. On page 384 in the 1907 *Annalen Der Physik* (4th Series, volume 23) Einstein, in 14 pages, first arrived at the diabolical formula of the equivalence of mass and energy $\mu = E_0/V^2$ (written $m = E/c^2$ or $E = mc^2$ in modern notation) where μ is mass; E_0 is energy and V^2 is the transmission constant for the speed of light squared. It was from this formula, which reached the editor's desk in Leipzig on 14 May 1907, that notice was served on an uncomprehending world that 1 gram of matter contained a latent energy of 89,875,517,873,681 dynes. Thus a sphere of uranium less than a metre in diameter contains the potential for an explosion of 1 million tonnes of TNT.

their first chain reaction was not achieved until December 1945 by Dr Igor Vasilyevich Kurchatov. The patent for the fusion or H bomb was filed in the United States on 26 May 1946 by Dr Janos (John) von Neumann (1903–57), a Hungarian-born mathematician, and Dr Klaus Julius Emil Fuchs (born in Germany 29 Dec 1911), the physicist, who defected from Britain.

Largest nuclear weapons

The most powerful ICBM are the USSR's SS-18s, each with up to 10 one-megaton MIRVs (multiple independently-targetable re-entry vehicles), thus each of a power 50 times as great as the Hiroshima bomb. The US Minute-man III has 3 MIRVs each of 335 kiloton force.

No official estimate has been published of the potential power of the device known as Doomsday, but this far surpasses any tested weapon. If it were practicable to construct, it is mooted that a 50,000 megaton cobalt-salted device could wipe out the entire human race except people deep underground and who did not emerge for more than five years.

Largest 'conventional' explosion

The largest use of conventional explosive was for the demolition of the fortifications and U Boat pens at Heligoland on 18 Apr

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A. Einstein. *Trägheit der Energie.*

oder, indem man die Energie E_0 des Systems relativ zum System (ξ, η, ζ) einführt:

$$E = \frac{E_0}{V^2} \cdot V^2 \frac{1}{\sqrt{1 - \left(\frac{v}{V}\right)^2}}.$$

Vergleicht man diesen Ausdruck mit dem für die Energie eines mit der Geschwindigkeit v bewegten Massenpunktes

$$\epsilon = \mu V^2 \frac{1}{\sqrt{1 - \left(\frac{v}{V}\right)^2}},$$

so erhält man folgendes Resultat: In bezug auf die Abhängigkeit der Energie vom Bewegungszustand des Koordinatensystems, auf welches die Vorgänge bezogen werden, läßt sich ein System gleichförmig bewegter Massenpunkte ersetzen durch einen einzigen Massenpunkt von der Masse $\mu = E_0/V^2$.

Ein System bewegter Massenpunkte besitzt also — als Ganzes genommen — desto mehr Trägheit, je rascher die Massenpunkte relativ zueinander bewegt sind. Die Abhängigkeit ist wieder gegeben durch das in der Einleitung angegebene Gesetz.

Bern, Mai 1907.

(Eingegangen 14. Mai 1907.)

1947. A net charge of 3797 tons 4061 tonnes (7122 tonnes gross) was detonated by Commissioned Gunner E. C. Jellis of the RN team headed by Lt F. T. Woosnam RN aboard *HMS Lasso* lying 9 miles 14.5 km out to sea.

Most bombed country

The most heavily bombed country in the world has been Laos. It has been estimated that between May 1964 and 26 Feb 1973 some 2½ million tons of bombs of all kinds were dropped along the North to South Ho Chi Minh Trail supply route to South Vietnam.

TANKS

Earliest

The first tank was 'No 1 Lincoln' modified to become 'Little Willie' built by William Foster & Co Ltd of Lincoln. It first ran on 6 Sept 1915. Tanks were first taken into action by the Heavy Section, Machine-Gun Corps, which later became the Royal Tank Corps, at the battle of Flers-Courcelette in France, on 15 Sept 1916. The Mark I Male tank, which was armed with a pair of 6-pounder guns and 4 machine-guns, weighed 28 tons 28.4 tonnes and was driven by a motor developing 105 hp which gave it a maximum road speed of 3 to 4 mph 4.8-6.4 km/h.

Heaviest

The heaviest tank ever constructed was the German Panzer Kampfwagen Maus II, which weighed 189 tons 192 tonnes. By 1945 it had reached only the experimental stage and was not proceeded with.

The heaviest operational tank used by any army was the 74 ton 75.2 tonnes 13-man French Char de Rupture 2C bis of 1922. It carried a 155 mm howitzer and had two 250 hp engines giving a maximum speed of 8 mph 12 km/h. The DM3,6 million (£950,000) German Leopard 2 has the greatest fire-power with a 120 mm 4.72 in gun. The world's fastest tank is the \$1.8 million (£900,000) XM-1 due for US Army service. The prototype reached 45 mph 72.4 km/h.

The heaviest British armoured vehicle ever built was the 78-ton 79 tonnes prototype 'Tortoise'. With a crew of seven and a designed speed of 12 mph 19 km/h, this tank had a width 2 in 5 cm less than that of the one-time operational 65-ton 66 tonnes 'Conqueror'. The most heavily armed is the 52-ton 52.8 tonnes 'Chieftain', put into service in November 1966, with a 120 mm gun.

GUNS

Earliest

Although it cannot be accepted as proved, the best opinion is that the earliest guns were constructed in North Africa, possibly by Arabs, in c. 1250. The earliest representation of an English gun is contained in an illustrated manuscript dated 1326 at Oxford. The earliest anti-aircraft gun was an artillery piece on a high angle mounting used in the Franco-Prussian War of 1870 by the Prussians against French balloons.

Largest

The two most massive guns ever constructed were used by the Germans in the siege of Sevastopol on the Eastern Front. They were of a calibre of 800 mm 31.5 in with barrels 28.87 m 94 ft 8½ in long and named *Dora* and *Gustav*. Their remains were discovered, one near Metzenhof, Bavaria in Aug 1945 and the other in the Soviet zone. They were built by Krupp as railway guns carried on 24 cars two of which had 40 wheels each. The whole assembly of the gun was 42.9 m 141 ft long and weighed 1323 tons 1344 tonnes with a crew of 1500. The range for an 84 ton projectile was 29 miles 46.67 km.

During the 1914-18 war the British Army used a gun of 18 in 457 mm calibre. The barrel alone weighed 125 tons 127 tonnes. In World War II the 'Bochebuster', a train-mounted howitzer with a calibre of 18 in 457 mm firing a 2500 lb 1133 kg shell to a maximum range of 22,800 yd 20 850 m, was used from 1940 onwards as part of the Kent coast defences.

Greatest range

The greatest range ever attained by a gun was achieved by the HARP (High Altitude Research Project) gun consisting of two 16.5 in 419 mm calibre barrels in tandem 36.4 m 119.4 ft long weighing 150 tonnes/tons at Yuma, Arizona, USA. On 19 Nov 1966 an 84 kg 185 lb projectile was fired to an altitude of 180 km 111.8 miles or 590,550 ft. The static V3 underground firing tubes built in 50 degree shafts near Mimoyecques, near Calais,

France to bombard London were never operative due to RAF bombing.

The famous long range gun, which shelled Paris in World War I, was the *Kaiser Wilhelm geschütz* with a calibre of 220 mm (8.66 in), a designed range of 79.5 miles 127.9 km and an achieved range of 76 miles 122 km from the Forest of Cérpy in March 1918. The Big Berthas were mortars of 420 mm 16.53 in calibre and with a range of less than 9 miles 14 500 m.

Mortars

The largest mortars ever constructed were Mallets mortar (Woolwich Arsenal, London, 1857), and the 'Little David' of World War II, made in the USA. Each had a calibre of 36¼ in 920 mm, but neither was ever used in action. The heaviest mortar used was the tracked German 600 mm 23.6 in siege piece known as 'Karl' before Stalingrad, USSR.

Largest cannon

The highest calibre cannon ever constructed is the *Tsar Puchka* (King of Cannons), now housed in the Kremlin, Moscow, USSR. It was built in the 16th century with a bore of 920 mm 36.2 in and a barrel 10 ft 5 in 3.18 m long. It weighs 2400 pouds (sic) or 40 tonnes. The Turks fired up to seven shots per day from a bombard 26 ft 7.92 m long, with an internal calibre of 42 in 1066 mm against the walls of Constantinople (now Istanbul) from 12 Apr to 29 May 1453. It was dragged by 60 oxen and 200 men and fired a stone cannon ball weighing 1200 lb 544 kg.

Military engines

The largest military catapults, or onagers, were capable of throwing a missile weighing 60 lb 27 kg a distance of 500 yd 457 m.

Conscientious Objector Most Obdurate

The only Conscientious Objector to be 6 times court martialled in World War II was Gilbert Lane of Wallington, Surrey. He served 31 months detention and 183 days imprisonment.

5. JUDICIAL

LEGISLATION AND LITIGATION

Statutes Oldest

The earliest known judicial code was that of King Ur-Hammu during the third dynasty of Ur, Iraq, in c. 2145 BC. The oldest English statute in the Statute Book is a section of the Statute of Marlborough of 1267, retitled in 1948 'The Distress Act, 1267'. Some statutes enacted by Henry II (d. 1189) and earlier kings are even more durable as they have been assimilated into the Common Law. An extreme example is Ine's Law concerning the administration of shires c 8 AD.

Longest in the United Kingdom

Measured in bulk the longest statute of the United Kingdom, is the Income Tax and Corporation Tax Act, 1970, which ran to 540 sections, 15 schedules and 670 pages. It is 1½ in 37 mm thick and costs £2.80. However, its 540 sections are surpassed in number by the 748 of the Merchant Shipping Act, 1894. Of old statutes, 31 George III xiv, the Land Tax Act of 1791, written on parchment, consists of 780 skins forming a roll 1170 ft 360 m long.

Shortest

The shortest statute is the Parliament (Qualification of Women) Act, 1918, which runs to 27 operative words—'A woman shall not be disqualified by sex or marriage from being elected to or sitting or voting as a Member of the Commons House of Parliament'. Section 2 contains a further 14 words giving the short title.

Most inexplicable

Certain passages in several Acts have always defied interpretation and the most inexplicable must be a matter of opinion. A Judge of the Court of Session of Scotland once sent the Editor his candidate which reads, 'In the Nuts (unground), (other than ground nuts) Order, the expression nuts shall have reference to such nuts, other than ground nuts, as would but for this amending Order not qualify as nuts (unground) (other than ground nuts) by reason of their being nuts (unground).'

Earliest English patent

The earliest of all known English patents was that granted by

Henry VI in 1449 to Flemish-born John of Utyman for making the coloured glass required for the windows of Eton College. The peak number of applications for patents filed in the United Kingdom in any one year was 63,614 in 1969. The shortest, concerning a harrow attachment, of 48 words was filed on 14 May 1956 while the longest, comprising 2318 pages of text and 495 pages of drawings, was filed on 31 Mar 1965 by IBM to cover a computer.

Most protracted litigation

The longest contested law suit ever recorded ended in Poona, India on 28 Apr 1966, when Balasaheb Patloji Thorat received a favourable judgement on a suit filed by his ancestor Maloji Thorat 761 years earlier in 1205. The points at issue were rights of presiding over public functions and precedences at religious festivals.

The dispute over the claim of the Prior and Convent (now the Dean and Chapter) of Durham Cathedral to administer the spiritualities of the diocese during a vacancy in the See grew fierce in 1283. It flared up again in 1672 and 1890; an attempt in November 1975 to settle the issue, then 692 years old, was unsuccessful. Neither side admit the legitimacy of writs of appointment issued by the other even though identical persons are named.

Fastest trial

The law's shortest delay occurred in Dupont Steel and Others v. Sirs and Others heard in the High Court on 25 Jan 1980; the appeal was heard on 26 Jan and the appeal heard in the House of Lords on 1 Feb (am) with the decision given pm.

Longest British trial

The longest trial in the annals of British justice was the Tichborne personation case. The civil trial began on 11 May 1871, lasted 103 days and collapsed on 6 Mar 1872. The criminal trial went on for 188 days, resulting in a sentence on 28 Feb 1874 for two counts of perjury (two 7 year consecutive terms of imprisonment with hard labour) on the London-born Arthur Orton, alias Thomas Castro (1834-98), who claimed to be Roger Charles Tichborne (1829-54), the elder brother of Sir Alfred Joseph Doughty-Tichborne, 11th Bt (1839-66). The whole case thus spanned 1025 days. The jury were out for only 30 minutes.

The impeachment of Warren Hastings (1732-1818), which began in 1788, dragged on for seven years until 23 Apr 1795, but the trial lasted only 149 days. He was appointed a member of the Privy Council in 1814.

The fraud case *R v. Bouzaglo and others* ended before Judge Brian Gibbens on 1 May 1981 having lasted 274 days.

Murder

The longest murder trial in Britain was that at the Old Bailey, London of Reginald Dudley, 51, and Robert Maynard, 46 in the Torso Murder of Billy Moseley and Micky Cornwall which ran before Mr Justice Swanwick from 11 Nov 1976 to 17 June 1977 with 136 trial days. Both men were sentenced to life (minimum 15 years) imprisonment. The costs were estimated to exceed £500,000 and the evidence 3,500,000 words.

The estimated costs of the trial of the 'Yorkshire Ripper' Peter Sutcliffe at the Old Bailey, London from 29 Apr to 22 May 1981 exceeded £250,000 but the cost of the police hunt in 1975-80 exceeded £4 million. (See also Highest costs p. 218).

Divorce

The longest trial of a divorce case in Britain was *Gibbons v. Gibbons and Roman and Halperin*. On 19 Mar 1962, after 28 days, Mr Alfred George Boyd Gibbons was granted a decree nisi against his wife Dorothy for adultery with Mr John Halperin of New York City, NY, USA.

Shortest trials

The shortest recorded British murder hearings were *R. v. Murray* on 28 Feb 1957 and *R. v. Cawley* at Winchester assizes on 14 Dec 1959. The proceedings occupied only 30 sec on each occasion.

Litigants in Person

Since the Union of Parliament in 1707 the only Scot to win an

appeal in person before the House of Lords has been Mr Jock Malloch, an Aberdeen Schoolmaster in 1971. He was restored to his employment under the dormant but operative Teachers Act, 1882 with costs.

Dr Mark Feldman, a podiatric surgeon, of Lauderhill, Florida became the first litigant in person to secure 7 figures (\$1 million) before a jury in compensatory and punitive damages in Sept 1980. The case concerned conspiracy and fraud alleged against 6 other doctors.

Longest address

The longest address in a British court was in *Globe and Phoenix Gold Mining Co. Ltd. v. Amalgamated Properties of Rhodesia*. Mr William Henry Upjohn, KC (1853-1941) concluded his speech on 22 Sept 1916, having addressed the court for 45 days.

Highest bail World

The highest amount ever demanded as bail was \$46,500,000 (then £16,608,333) against Antonio De Angelis in a civil damages suit by the Harbor Tank Storage Co. filed in the Superior Court, Jersey City, New Jersey, USA on 16 Jan 1964 in the Salad Oil Swindle. He was released on 4 June 1973. Abul Hassen Ebtehaj, later Chairman of the Iranian Bank in Teheran, was in 1967 granted bail in excess of \$50 million.

Great Britain

The highest bail figure in a British court is £250,000 granted to the former Hong Kong policeman, chief superintendent Peter Godber, 52, at Bow Street Court, Greater London on 16 May 1974 when charged with bribery. This consisted of a maximum of four sureties aggregating £200,000 and £50,000 in his own recognisance.

Longest arbitration

The longest arbitration (under the 1950 Act) on record has been the Royce Arbitration. It lasted 239 days and concerned the Mitchell Construction Co. and the East Anglian Regional Hospital Board over the building of Peterborough Hospital.

The longest case before an Industrial Tribunal has been 44 days during more than 13 months (2 May 1977-29 June 1978) when the columnist C. Gordon Tether contested the fairness of his dismissal by *The Financial Times* in person.

Best attended trial

The greatest attendance at any trial was that of Major Jesús Sosa Blanco, aged 51, for an alleged 108 murders. At one point in the 12½ hr trial (5.30 p.m. to 6 a.m., 22-23 Jan 1959), 17,000 people were present in the Havana Sports Palace, Cuba.

Greatest damages Personal injury World

The greatest personal injury damages ever awarded were to Janelle Lynn Stearns, 12, against Park Avenue Hospital Inc and an anaesthetist Dr Howard K. Gifford in settlement for alleged medical malpractice resulting in severe brain damage following a tonsillectomy at Pomona, California in May 1973. If she lives to the average expectation of 63.9 additional years the payments will total \$26,541,832. The largest single cash payment settlement for a single person has been \$6,800,000 (then £3.4 million) to the lawyer John Coates, 42, of Austin, Texas, USA against Remington Arms Co. Inc *et al.* on 23 Oct 1978. The case concerned severe injury from a defectively made hunting rifle.

The highest damages ever quantified have been \$14,387,674, following upon the crash of a private aircraft at South Lake, Tahoe, California, USA on 21 Feb 1967, to the sole survivor Ray Rosendin, 45, by the Santa Clara Superior Court on 8 Mar 1972. Rosendin was awarded *inter alia* \$1,069,374 for the loss of both legs and disabling arm injuries and \$1,213,129 for the loss of his wife. Punitive damages against Avco-Lycoming Corporation, which allegedly violated Federal regulations when it rebuilt the aircraft engine owned by Rosendin Corporation, originally set at \$10½ million were overturned on appeal.

Great Britain

The record damages in the High Court are £414,563 awarded by Mr Justice Taylor in December 1981 to Mrs Carol Brown, of Morden, Surrey against Merton, Sutton and Wandsworth Area Health Authority for injuries resulting from the administration

of epidural anaesthesia during the birth of her first child in January 1979.

Breach of contract

The greatest damages ever awarded for a breach of contract were £610,392, awarded on 16 July 1930 to the Bank of Portugal against the printers Waterlow & Sons Ltd, of London, arising from their unauthorized printing of 580,000 five-hundred escudo notes in 1925. This award was upheld in the House of Lords on 28 Apr 1932. One of the perpetrators, Arthur Virgilio Alves Reis, served 16 years (1930-46) in gaol.

Breach of promise

The largest sum involved in a breach of promise suit in the United Kingdom was £50,000, accepted in 1913 by Miss Daisy Markham, alias Mrs Annie Moss (d. 20 Aug 1962, aged 76), in settlement against the 6th Marquess of Northampton DSO (1885-1978).

Defamation World

A sum of \$16,800,000 (£6,720,000) was awarded to Dr John J. Wild, 58, at the Hennepin District Court, Minnesota, USA, on 30 Nov 1972 against The Minnesota Foundation and others for defamation, bad-faith termination of a contract, interference with professional business relationship and \$10.8 million in punitive damages. These amounts are unappealed. The \$39.6 million awarded in Columbus, Ohio on 1 Mar 1980 to Robert Guccione, publisher of *Penthouse*, for defamation against Lowry Flynt, publisher of *Hustler* was reduced by Judge Craig Wright to \$4 million on 17 Apr 1980.

The greatest damages for defamation ever awarded in the United Kingdom have been £327,000 in the Courts in Edinburgh in favour of Capital Life Assurance Co against the *Scottish Daily Record* and the *Sunday Mail* for articles published in the latter in 1975.

The most expensive and longest defamation trial was *Orme v. Associated Newspapers Ltd.*, known as the Moonies case before Mr Justice Comyn from 6 Oct 1980 to 31 Mar 1981. The *Daily Mail*'s article of May 1978 was found not to be defamatory of the Unification Church. Costs exceeded £500,000.

The \$500 million libel suit brought by the California resort La Costa against *Penthouse* and its publisher in March 1975 reached the Court in December 1981 by which time the costs exceeded \$6,000,000.

Greatest compensation for Wrongful Imprisonment

William De Palma (b. 1938) of Whittier, California, agreed to a \$750,000 (then £340,000) settlement for 16 months wrongful imprisonment in McNeil Island Federal Prison, on 12 Aug 1975 after a 15 year sentence for armed robbery in Buena Park on forged fingerprint evidence in 1968.

The greatest Crown compensation in Britain for wrongful imprisonment has been £17,500 paid to Laszio Virag, 35, who had been sentenced to 10 years imprisonment at Gloucester assizes in 1969 for theft and shooting and wounding a police officer. His acceptance of this sum was announced on 23 Dec 1974 after his having been released in April 1974 on grounds of mistaken identification.

Greatest Alimony

The highest alimony awarded by a court has been \$2,261,000 (then £983,000) against George Storer Sr, 74, in favour of his third wife Dorothy, 73, in Miami, Florida on 29 Oct 1974. Mr Storer, a broadcasting executive, was also ordered to pay his ex-wife's attorney \$200,000 (then £86,950) in fees.

Greatest Alimony Suit

Belgian born Sheika Dena Al-Fassi, 23, filed the highest ever alimony claim of \$3000 million (then £1666 million) against her former husband Sheik Mohammed Al-Fassi, 28, of the Saudi Arabia royal family in Los Angeles, California in February 1982. Mr Marvin Mitchelson explaining the size of the settlement claim alluded to the Sheik's wealth which included 14 homes in Florida alone and numerous private aircraft.

Greatest divorce settlement

The highest High Court divorce award received was £700,000 on 13 Nov 1980 for 'Mrs P' after 23 years of marriage against her former husband from Jersey from whom she had been receiving £6000 per annum. In *Edgar v Edgar* in 1980, £750,000 was awarded but this was set aside on appeal when Mrs Edgar accepted a much lesser figure.

Patent case

The greatest settlement ever made in a patent infringement case is \$9,250,000 (then £3,303,000), paid in April 1952 by the Farm Motor Company to the Ferguson Tractor Co for a claim filed in January 1948.

Largest suit

The highest amount of damages ever sought is \$675,000,000,000 (then equivalent to 10 times the US national wealth) in a suit by Mr I. Walton Bader brought in the US District Court, New York City on 14 Apr 1971 against General Motors and others for polluting all 50 states.

Highest costs

The trial judge in *R v. Sinclair and others* (the handless corpse murder) ordered the international drug trafficker Alexander James Sinclair, 36 of N.Z. (sentenced to a minimum term of 20 years for the murder of Marty Johnstone found in a quarry at Chorley, Lancashire) to pay £1 million towards the Crown's costs.

Longest lease

Part of the Cattle Market, Dublin, Ireland was leased by John Jameson to the city's corporation on a lease for 100,000 years expiring on 21 January AD 101,863.

Greatest lien

The greatest lien ever imposed by a court is 40,000 million lire (then £27 million) on 9 Apr 1974 upon Vittorio and Ida Riva in Milan for back taxes allegedly due on a chain of cotton mills around Turin, Italy, inherited by their brother Felice (who left for Beirut) in 1960.

Wills Shortest

The shortest valid will in the world is 'Vše zene', the Czech for 'All to wife', written and dated 19 Jan 1967 by Herr Karl Tausch of Langen, Hesse, Germany. The shortest will contested but subsequently admitted to probate in English law was the case of *Thorn v. Dickens* in 1906. It consisted of the three words 'All for Mother'.

Longest

The longest will on record was that of Mrs Frederica Cook (USA), in the early part of the century. It consisted of four bound volumes containing 95,940 words. The will of Thomas Cubitt (1788-1855), the London builder, ran to 34,740 words.

Judges Most Durable

The oldest recorded active judge was Judge Albert R. Alexander (1859-1966) of Plattsburg, Missouri, USA. He was the magistrate and probate judge of Clinton County until his retirement aged 105 years 8 months on 9 July 1965. Judge J. Frank Graff (b. 28 Dec 1888) was serving as a senior judge at Armstrong County Court House, Pennsylvania since 1 Jan 1923. Judge Vernon D. Hitchings of Norfolk, Virginia disposed of his millionth traffic case from January 1954 to 19 Jan 1977. Of these some 965,000 of his verdicts were unappealed or upheld on appeal. In more than 23 years of judgeship to his retirement in Dec 1968, Judge James Hardie Ferguson heard 13,000 cases in the Wilmington Juvenile and Domestic Relations Court, North Carolina, without a single appeal.

Great Britain

The greatest recorded age at which any British judge has sat on a bench was 93 years 9 months in the case of Sir William Francis Kyffin Taylor, GBE, KC (later Lord Maenan), who was born on 9 July 1854 and retired as presiding judge of the Liverpool Court of Passage in April 1948, having held that position since 1903. Sir Salathiel Lovell (1619-1713) was, however, still sitting when he died on 3 May 1713 in his 94th or 95th year. The greatest age at which a House of Lords judgement has been given is 92 in the case of the 1st Earl of Halsbury (b. 3 Sept 1823) in 1916.

Lord Chief Baron of Exchequer in Ireland, the Rt. Hon. Christopher Palles (1831–1920) served for 42 years from 17 Feb 1874 till 1916.

The longest serving living judge in Britain has been the Rt Hon Lord Denning (b. 23 Jan 1899), who was appointed a High Court Judge in 1944, a Lord Justice of Appeal in 1948, a Law Lord in 1957 and Master of the Rolls in 1962. He retired on 31 July 1982.

Master of the Rolls

The longest tenure of the Mastership of the Rolls since the office was inaugurated in 1286 has been 24 years 7 months by David de Wollere from 2 July 1346 to 27 March 1371. The longest tenure since the Supreme Court Judicature Act, 1881 has been that of 20 years (1962–82) by Lord Denning (see above). William Morland held the office for 77 days while in 1629 Sir Humphrey May died 'soon after' his appointment on 10 April.

Judge Youngest

No collated records on the ages of judicial appointments exist. However Thomas J. Boynton (b. Amherst, Ohio on 31 Aug 1838) is known to have been appointed Federal Judge at Key West, Florida on 20 Jan 1864 aged 25 years 142 days. Judge Susan I. Broyles (b. Alamosa, Colorado, USA, 25 June 1949) was appointed County Judge of Conejos County, Colorado on 9 Jan 1973 aged 23 years 198 days.

The youngest certain age at which any English judge has been appointed is 31, in the case of Sir Francis Buller (b. 17 Mar 1746), who was appointed Second Judge of the County Palatine of Chester on 27 Nov 1777, and Puisne Judge of the King's Bench on 6 May 1778, aged 32 years 1 month. The lowest age of appointment this century has been 42 years 2 months of Lord Hodson in 1937.

Most Judges

Lord Balmerino was found guilty of treason by 137 of his peers on 28 July 1746. In *R v. Canning* at the Old Bailey in 1754 Elizabeth Canning was deported to Connecticut for wilful perjury by 19 judges voting 10 to 9. In *Young, James and Webster v. United Kingdom*, the British Rail 'Closed Shop' case before the European Court of Human Rights in Strasbourg on 3–4 Mar 1981, Mr David Calcutt QC won a judgement for the railwaymen by 18 to 3.

Youngest English QC

The earliest age at which a barrister has taken silk this century is 33 years 8 months in the case of Mr (later the Rt Hon Sir) Francis Raymond Evershed (1899–1966) in April 1933. He was later Lord Evershed, Master of the Rolls. Buller (see above) was nepotistically given silk aged 31, being a nephew of the then Lord Chancellor, Lord Bathurst.

Most successful

Sir Lionel Luckhoo KCMG CBE, senior partner of Luckhoo and Luckhoo of Georgetown, Guyana succeeded in getting his 240th successive murder charge acquitted by 1 Jan 1982.

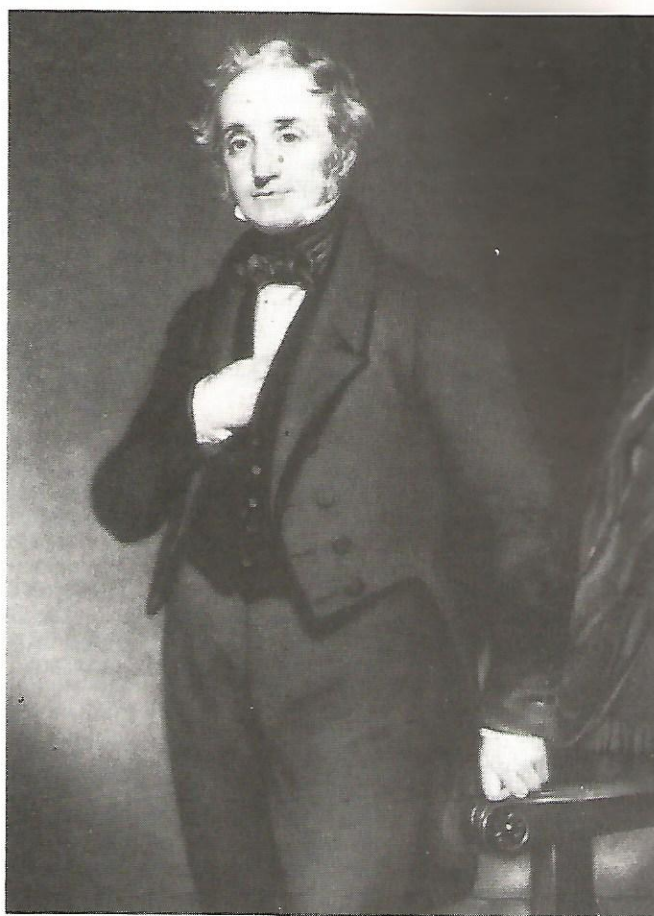
Deadliest prosecutor

Joe Freeman Britt, District Attorney, Sixteenth Judicial District, North Carolina, USA obtained 23 death verdicts in 28 months to mid-1976 when he had 13 defendants simultaneously on death row.

CRIME

Mass Killings China

The greatest massacre ever imputed by the government of one sovereign nation against the government of another is that of 26,300,000 Chinese during the regime of Mao Tse-tung between 1949 and May 1965. This accusation was made by an agency of the USSR Government in a radio broadcast on 7 Apr 1969. The broadcast broke down the figure into four periods:—2.8 million (1949–52); 3.5 million (1953–7); 6.7 million (1958–60); and 13.3 million (1961–May 1965). The highest reported death figures in single monthly announcements on Peking radio were 1,176,000 in the provinces of Anhwei, Chekiang, Kiangsu, and Shantung, and 1,150,000 in the Central South Provinces. Po I-po, Minister of Finance, is alleged to have stated in the organ *For a lasting*



London's master builder Thomas Cubitt (1788–1855) whose will ran to 34,740 words (see p. 218). (BBC Hulton Picture Library)

peace, for a people's democracy 'in the past three years (1950–2) we have liquidated more than 2 million bandits'. General Jacques Guillermez, a French diplomat estimated the total executions between February 1951 and May 1952 at between 1 million and 3 million. In April 1971 the Executive cabinet or Yuan of the implacably hostile government of The Republic of China in Taipei, Taiwan announced its official estimate of the mainland death roll in the period 1949–69 as 'at least 39,940,000'. This figure, however, excluded 'tens of thousands' killed in the Great Proletarian Cultural Revolution, which began in late 1966. The Walker Report published by the US Senate Committee of the Judiciary in July 1971 placed the parameters of the total death roll within China since 1949 between 32.25 and 61.7 million. An estimate of 63,784,000 was published by Jean-Pierre Dujardin in *Figaro* magazine of 19–25 Nov 1978.

USSR

The total death roll in the Great Purge, or *Yezhovshchina*, in the USSR, in 1936–8 has, not surprisingly, never been published. Evidence of its magnitude may be found in population statistics which show a deficiency of males from before the outbreak of the 1941–5 war. The reign of terror was administered by the *Narodny Kommissariat Vnutrennykh Del* (NKVD), or People's Commissariat of Internal Affairs, the Soviet security service headed by Nikolay Ivanovich Yezhov (1895–1939), described by Nikita Khrushchiov in 1956 as a 'degenerate'. S. V. Utechin, an expert on Soviet affairs, regarded estimates of 8,000,000 or 10,000,000 victims as 'probably not exaggerations'. On 17 Aug 1942 Stalin indicated to Churchill in Moscow that 10 million kulaks had been liquidated for resisting the collectivization of their farms.

Nazi Germany

Obersturmbannführer (Lt-Col) Karl Adolf Eichmann (b. Solingen, W. Germany 19 Mar 1906) of the SS was hanged in a small room inside Ramleh Prison, near Tel Aviv, Israel, at just before midnight (local time) on 31 May 1962, for his complicity

in the deaths of an indeterminably massive number of Jews during World War II, under the instruction given in April 1941 by Adolf Hitler (1889-1945) for 'the Final Solution' (*Endlösung*).

At the SS (*Schutzstaffel*) extermination camp (*Vernichtungslager*) known as Auschwitz-Birkenau (Oświęcim-Brzezinka), near Oświęcim (Auschwitz), in southern Poland, where a minimum of 920,000 people (Soviet estimate is 4,000,000) were exterminated from 14 June 1940 to 18 Jan 1945, the greatest number killed in a day was 6000. The man who operated the release of the 'Zyklon B' cyanide pellets into the gas chambers there during this time was Sgt Major Moll (variously Mold). The Nazi (*Nationalsozialistische Deutsche Arbeiterpartei*) Commandant during the period 1940-3 was Rudolph Franz Ferdinand Höss who was tried in Warsaw from 11 Mar to 2 Apr 1947 and hanged, aged 47, at Oświęcim on 15 Apr 1947.

Forced labour

No official figures have been published of the death roll in Corrective Labour Camps in the USSR, first established in 1918. The total number of such camps was known to be more than 200 in 1946 but in 1956 many were converted to less severe Corrective Labour Colonies. An estimate published in the Netherlands puts the death roll between 1921 and 1960 at 19,000,000. The camps were administered by the *Cheka* until 1922, the OGPU (1922-34), the NKVD (1934-46), the MVD (1946-53) and the KGB since 1953. Solzhenitsyn's aggregate best estimate is that the number of inmates has been 66 million. The study by S. Gross published 1975 stated there were then 2 million political prisoners in 96 camps. In China there are no published official statistics on the numbers undergoing *Lao Jiao* (Education through Labour) nor *Lao Dong Gai Zao* (Reform through manual labour). An estimate published by Bao Ruowang, who was released in 1964 due to his father having been a Corsican, was 16,000,000 which then approached 3 per cent of the population.

Genocide

In the genocide in Kampuchea, formerly Cambodia, according to the Khmer Rouge foreign minister Ieng Sarg, more than a third of the 8 million Khmers were killed between 17 Apr 1975 and January 1979. Under the rule of Saloth Sar *alias* Pol Pot, a founder member of the CPK (Communist Party of Kampuchea, formed in September 1960) towns, money and property were abolished and economical execution by bayonet and club introduced for such offences as falling asleep during the day, asking too many questions, playing non-Communist music, being old and feeble, being the offspring of an 'undesirable' or being too well educated. Deaths at the Tuol Sleng interrogation centre reached 582 in a day. It has been estimated that 35 million Chinese were wiped out in the Mongolian invasion of 1210-19.

Largest criminal organization

The largest syndicate of organized crime is the Mafia or La Cosa Nostra, which has infiltrated the executive, judiciary and legislature of the United States. It consists of some 3000 to 5000 individuals in 24 'families' federated under 'The Commission', with an annual turnover in vice, gambling, protection rackets, cigarettes, bootlegging, hijacking, narcotics, loan-sharking and prostitution estimated in the *Time* magazine survey of May 1977 at \$48,000 million per annum of which \$25.3 billion were profit—then 9½ times more than Exxon. The origin in the US dates from 1869 in New Orleans. The biggest Mafia (derived from an arabic expression connoting beauty, excellence allied with bravery) killing was on 11-13 Sept 1931 when the topmost man Salvatore Maranzano, *Il Capo di Tutti Capi*, and 40 allies were liquidated.

Murder rate Highest

The country with the highest recorded murder rate is Mexico, with 46.3 registered homicides for each 100,000 of the population in 1970. It has been estimated that the total number of murders in Colombia during *La Violencia* (1945-62) was about 300,000, giving a rate over a 17-year period of more than 48 a day. A total of 592 deaths was attributed to one bandit leader, Tofino ('Sparks') Rojas, aged 27, between 1948 and his death in an ambush near Armenia on 22 Jan 1963. Some sources attribute 3500 slayings to him.

The highest homicide rates recorded in New York City have

been 58 in a week in July 1972 and 13 in a day in August 1972. In 1973 the total for Detroit, Michigan (pop. then 1.5 million) was 751.

Lowest

The country with the lowest officially recorded rate in the world is The Maldives with a nil rate among its naturals since its independence in July 1965. In the Indian state of Sikkim, in the Himalayas, murder is, however, practically unknown, while in the Hunza area of Kashmir, in the Karakoram, only one definite case by a Hunzarwal has been recorded since 1900.

Great Britain

In Great Britain the total number of homicides and deaths from injuries purposely inflicted by other persons in the year 1980 was 620. This figure compares with a murder total of 124 in 1937 and 125 in 1958.

Terrorist Outrages

The greatest death roll from a terrorist bomb was 76 killed and 200 injured at the central railway station, Bologna, Italy on 2 Aug 1980.

Most prolific murderers World

It was established at the trial of Buhram, the Indian thug, that he had strangled at least 931 victims with his yellow and white cloth strip or *ruhmāl* in the Oudh district between 1790 and 1840. It has been estimated that at least 2,000,000 Indians were strangled by Thugs (*burtotes*) during the reign of the Thuggee (pronounced tugee) cult from 1550 until its final suppression by the British *raj* in 1853. The greatest number of victims ascribed to a murderer has been 650 in the case of Countess Erszebet Bathory (1560-1614) of Hungary. At her trial which began on 2 Jan 1611 a witness testified to seeing a list of her victims in her own handwriting totalling this number. All were alleged to be young girls from the neighbourhood of her castle at Csejthe where she died on 21 Aug 1614. She had been walled up in her room for the 3½ years after being found guilty.

20th century

Pedro Alonso López (b. Columbia, 1949) known as the 'Columbian Monster', was reported captured by the villagers of Ambato, Ecuador in early March 1980. He admitted to more than 300 murders of pre-teen girls in Colombia, Peru and Ecuador since 1973. The remains of 53 victims of the 110 admitted to in Ecuador were rapidly detected after his confession.

The most prolific one-at-a-time murderer in Western Europe has been Bruno Lüdke (Germany) (b. 1909), who confessed to 85 murders of women between 1928 and 29 Jan 1943. He was executed by injection without trial in a hospital in Vienna on 8 Apr 1944.

In drunken rampage lasting 8 hours on 26-27 Apr 1982 Policeman Wou Bom-Kon, 27, killed 57 people and wounded 35 with 176 rounds of rifle ammunition and hand grenades in the Kyong Sang-Namdo province of South Korea. He blew himself up with a grenade.

Great Britain

Six men were each charged with 21 murders at Lancaster Crown Court on 9 June 1975 concerning the bombing of the two Birmingham public houses Mulberry Bush and Tavern in the Town on 21 Nov 1974. They were John Walker, Patrick Hill, Robert Hunter, Noel McIlkenny, William Power and Hugh Callaghan. The Home Office began, in February 1981, to investigate the attribution of 26 deaths between 1973 and 1979 to the arsonist Bruce Lee. In January 1981 he was sent to a mental hospital by Leeds Crown Court, but on 14 Mar 1982 he retracted his confessions.

Judith Minna Ward, 25, of Stockport, Cheshire was convicted on 11 separate murder charges on 4 Nov 1974 making 12 in all arising from the explosion in an army coach on the M.62 near Drighlington, West Yorkshire on 4 Feb 1974. Mary Ann Cotton (*née* Robson) (b. 1832, East Rainton, County Durham), hanged in Durham Jail on 24 Mar 1873 is believed to have poisoned 14, possibly 20, people.

'Smelling out'

The greatest 'smelling out' recorded in African history occurred before Shaka (1787-1828) and 30,000 Nguni subjects near the River Umhlatuzana, Zululand (now Natal, South Africa) in March 1824. After 9 hr, over 300 were 'smelt out' as guilty of smearing the Royal *Kraal* with blood, by 150 witch-finders led by the hideous female *isangoma* Nobela. The victims were declared innocent when Shaka admitted to having done the smearing himself to expose the falsity of the power of his diviners. Nobela poisoned herself with atropine ($C_{17}H_{23}NO_3$), but the other 149 witch-finders were thereupon skewered or clubbed to death.

Suicide

The estimated daily rate of suicides throughout the world surpassed 1000 in 1965. The country with the highest suicide rate is Hungary, with 42.6 per 100,000 of the population in 1977. The country with the lowest recorded rate is Jordan with a single case in 1970 and hence a rate of 0.04 per 100,000.

In England and Wales there were 4195 suicides in 1980, or an average of 11.49 per day. In the northern hemisphere April and May tend to be peak months.

Mass Suicide

The final total of the mass cyanide poisoning of the People's Temple cult near Port Kaituma, Guyana on 18 Nov 1978 was 913. The leader was the paranoid 'Rev.' Jim Jones of San Francisco, California who had deposited 'millions of dollars' overseas.

Mass Poisonings

On 1 May 1981 the first victim of the Spanish cooking oil scandal fell ill. On 12 June it was discovered that his cause of death was the use of 'denatured' industrial colza from rape seed. By February 1982 the death toll had reached 260 dead with thousands maimed. The manufacturers Ramon and Elias Ferrero await trial in Carabanchel Jail, Madrid.

Robbery

The greatest robbery on record was that of the Reichsbank following Germany's collapse in April/May 1945. The largest haul consisted of negotiable securities valued at \$400,000,000. In April 1979 three men were convicted and sentenced to terms of imprisonment at Brantford, Ontario on a number of conspiracy charges connected with some of these bonds.

Gold bullion, foreign exchange and jewels worth \$20,000,000 (worth some \$200 million (£91 million) today) were also stolen by members of the German and American armies. None of this loot was recovered and none of the perpetrators were ever brought to trial.

Art

The greatest recorded art robbery by market valuation was the removal of 19 paintings, valued at £8,000,000 taken from Russborough House, Blessington, County Wicklow, Ireland, the home of Sir Alfred and Lady Beit by 4 men and a woman on 26 Apr 1974. They included the £3 million Vermeer 'Lady Writing a Letter with her maid'. The paintings were recovered on 4 May near Glandore, County Cork. Dr Rose Bridgit Dugdale (b. 1941) was convicted. It is arguable that the value of the *Mona Lisa* at the time of its theft from The Louvre, Paris on 21 Aug 1911 was greater than this figure. It was recovered in Italy in 1913 when Vincenzo Perruggia was charged with its theft. On 1 Sept 1964 antiquities reputedly worth £10,000,000 were recovered from 3 warehouses near the Pyramids, Egypt.

Bank

During the extreme civil disorder prior to 22 Jan 1976 in Beirut, Lebanon, a guerilla force blasted the vaults of the British Bank of the Middle East in Bab Idriss and cleared out safe deposit boxes with contents valued by former Finance Minister, Lucien Dahadah, at \$50 million and by another source as an 'absolute minimum' of \$20 million.

Britain's greatest ever robbery was of an estimated £8,000,000 from the Bank of America, Mayfair, London on 24 Apr 1975. On 16 Nov 1976 five men were jailed for between 12 and 23 years. Leonard 'The Twirler' Wilde, 51, was the locksmith.

Train

The greatest recorded train robbery occurred between about 3.03 a.m. and 3.27 a.m. on 8 Aug 1963, when a General Post Office mail train from Glasgow, Scotland, was ambushed at Sears Crossing and robbed at Bridego Bridge near Mentmore, Buckinghamshire. The gang escaped with about 120 mailbags containing £2,631,784 worth of bank notes being taken to London for destruction. Only £343,448 was recovered.

Jewels

The greatest recorded theft of jewels was from the bedroom of the 'well-guarded' villa of Prince Abdel Aziz Bin Ahmed Al-Thani near Cannes, France on 24 July 1980 valued at \$16,000,000 (then £7¼ million). The haul from Carrington & Co Ltd of Regent Street, London, on 21 Nov 1965 was estimated to be £500,000.

Greatest kidnapping ransom

Historically the greatest ransom paid was that for Atahualpa by the Incas to Francisco Pizarro in 1532-3 at Cajamarca, Peru which constituted a hall full of gold and silver worth in modern money some \$170 million (£95 million).

The greatest ransom ever reported is 1500 million pesos (£25,300,000) for the release of the brothers Jorge Born, 40 and Juan Born, 39, of Bunge and Born, paid to the left wing urban guerilla group Montoneros in Buenos Aires, Argentina on 20 June 1975.

The youngest person kidnapped has been Carolyn Wharton born at 12.46 p.m. on 19 Mar 1955 in the Baptist Hospital, Texas, USA and kidnapped, by a woman disguised as a nurse, at 1.15 p.m. aged 29 min.

Greatest hijack ransom

The highest amount ever paid to aircraft hijackers has been \$6 million (then £3.42 million) by the Japanese government in the case of a JAL DC-8 at Dacca Airport on 2 Oct 1977 with 38 hostages. Six convicted criminals were also exchanged. The Bangladesh government had refused to sanction any retaliatory action.

Largest narcotics haul

In March 1982 US Customs found by chance 22 boxes of highest quality cocaine weighing 3700 lb 1678 kg from a Medellin, Colombia flight at Miami International Airport, Florida. The US Drug Enforcement Administration estimated the street value at \$950 million £527 million.

The bulkiest haul was 2850 long tons 2 903 000 kg of Colombian marijuana in the 14 month long 'Operation Tiburon' concluded by the DEA with the arrest of 495 people and the seizure of 95 vessels announced on 5 Feb 1982.

The Home Office disclosed on 23 Dec 1977 that 13 million LSD tablets with a street value approaching £100 million had been destroyed on the conclusion of 'Operation Julie'.

Greatest banknote forgery

The greatest forgery was the German Third Reich government's forging operation, code name 'Bernhard', engineered by SS Sturmbannfuhrer Alfred Naujocks of the Technical Dept of the German Secret Service Amt VI F in Berlin in 1940-1. It involved £150,000,000 worth of £5 notes.

Biggest bank fraud

The largest amount of money named in a defalcation case has been a gross £33,000,000 at the Lugano branch of Lloyd's Bank International Ltd in Switzerland on 2 Sept 1974. Mr Mark Colombo was arrested pending charges including falsification of foreign currency accounts and suppression of evidence.

Computer fraud

Between 1964 and 1973, 64,000 fake insurance policies were created on the computer of the Equity Funding Corporation involving \$2000 million.

Stanley Mark Rifkin (b. 1946) was arrested in Carlsbad, Califor-

nia by the FBI on 6 Nov 1978 charged with defrauding a Los Angeles bank of \$10.2 million (then £4.85 million) by manipulation of a computer system. He was sentenced to 8 years in June 1980.

Welfare swindle

The greatest welfare swindle yet worked was that of the gypsy Anthony Moreno on the French Social Security in Marseille. By forging birth certificates and school registration forms, he invented 197 fictitious families and 3000 children on which he claimed benefits from 1960 to mid-1968. Moreno, nicknamed 'El Chorro' (the fountain), was later reported free of extradition worries and living in luxury in his native Spain having absquatulated with an estimated £2,300,000.

Largest object ever stolen by a single man

On a moonless night at dead calm high water on 5 June 1966 armed with only a sharp axe, N William Kennedy slashed free the mooring lines at Wolfe's Cove, St Laurence Seaway, Quebec, Canada, of the 10,639 dwt S S *Orient Trader* owned by Steel Factors Ltd of Ontario. The vessel drifted to a waiting blacked out tug thus escaping a ban on any shipping movements during a violent wild-cat waterfront strike. She sailed for Spain.

CAPITAL PUNISHMENT

Capital punishment was first abolished *de facto* in 1798 in Liechtenstein. The death penalty for murder was formally abolished in Britain on 18 Dec 1969. Between the 5-4 Supreme Court decision against capital punishment in June 1972 and April 1975, 32 of the 50 States of the USA voted to restore it.

Capital punishment in the British Isles dates from AD 450, but was abolished by William I and re-imposed by Henry I, reaching a peak in the reign of Edward VI (1547-53), when an average of 560 persons were executed annually at Tyburn alone. Even into the 19th century, there were 223 capital crimes, though people were, in practice, hanged for just 25 of these. Between 1830 and 1955 the most murderers hanged in a year was 27 (24 men, 3 women) in 1903. The least was 5 in 1854, 1921 and 1930. In 1956 there were no hangings in England, Wales or Scotland, since when the highest number in any year to 1964 was 5.

Largest hanging

The most people hanged from one gallows was 38 Sioux Indians by William J. Duly outside Mankato, Minnesota, USA for the murder of unarmed citizens on 26 Dec 1862.

The Nazi Feldkommandant simultaneously hanged 50 Greek resistance men as a reprisal in Athens on 22 July 1944.

Last hangings

The last public execution in England took place outside Newgate Prison, London at 8 a.m. on 26 May 1868, when Michael Barrett was hanged for his part in the Fenian bomb outrage on 13 Dec 1867, when 12 were killed outside the Clerkenwell House of Detention, London. The earliest non-public execution was of the murderer Thomas Wells on 13 Aug 1868. The last public hanging in Scotland was that of the murderer Joe Bell in Perth in 1866. The last in the United States occurred at Owensboro, Kentucky in 1936. The last hangings in the United Kingdom were those of Peter Anthony Allen (b. 4 Apr 1943) at Walton Prison, Liverpool, and John Robson Walby (b. 1 Apr 1940), alias Gwynne Owen Evans, at Strangeways Gaol, Manchester both on 13 Aug 1964. They had been found guilty of the capital murder of John Alan West, on 7 Apr 1964. The 14th and last woman executed this century was Mrs Ruth Ellis (née Neilson), 28, for the murder of David Blakely, 25, shot outside the Magdala, Hampstead, on 10 Apr 1955. She was executed on 13 July at Holloway. The last hanging in the Republic of Ireland was in 1954.

Last from yard-arm

The last naval execution at the yard-arm was the hanging of Private John Dalliger, Royal Marines, aboard HMS *Leven* in the River Yangtze, China, on 13 July 1860. Dalliger had been found guilty of two attempted murders.

Youngest

Although the hanging of persons under 18 was expressly excluded only in the Children's and Young Person's Act, 1933

(Sec. 33), no person under that age was, in fact, executed more recently than 1887. The lowest satisfactorily recorded age was of a boy aged 8 'who had malice, cunning and revenge' in firing two barns and who was hanged at Abingdon, Oxfordshire in the 17th century. The youngest persons hanged since 1900 have been 13 years old, the most recent of whom was Francis Robert George ('Flossie') Forsyth on 10 Nov 1960.

Oldest

The oldest person hanged in the United Kingdom since 1900 was a man of 71 named Charles Frembd (*sic*) at Chelmsford Gaol on 4 Nov 1914, for the murder of his wife at Leytonstone, Waltham Forest, Greater London. In 1822 John Smith, said to be 80, of Greenwich, Greater London, was hanged for the murder of a woman.

Last public guillotining

The last person to be publicly guillotined in France was the murderer Eugen Weidmann before a large crowd at Versailles, near Paris, at 4.50 a.m. on 17 June 1939. In January 1978 Marcel Chevalier was nominated to succeed his uncle Andre Obrecht an executioner who had in turn succeeded his uncle Henri Desfourneaux. Dr Joseph Ignace Guillotin (1738-1812) died a natural death. He had advocated the use of the machine designed by Dr Antoine Louis in 1789 in the French constituent assembly. There were 6 guillotining in the 1970s.

Death row

In October 1981 there were 180 prisoners in the United States on 'Death Row'. Caryl Whittier Chessman, aged 38 and convicted of 17 felonies, was executed on 2 May 1960 in the gas chamber at the California State Prison, San Quentin, California, USA. In 11 years 10 months and one week on 'death row', Chessman had won eight stays. John Spenkelink, 30, was the first to be electrocuted since 1967 at Raiford Jail, Florida on 25 May 1979. Samanichi Hirasawa celebrated his 90th birthday on death row in Sendai Prison, northern Japan on 18 Feb 1982.

Executioner

The longest period of office of a Public Executioner was that of William Calcraft (1800-79), who was in action from 1828 to 25 May 1874 and officiated at nearly every hanging outside and later inside Newgate Prison, London. On 2 Apr 1868 he hanged the murderess Mrs Frances Kidder, 25, outside Maidstone Jail, Kent—the last public execution of a woman.

From 1900 to abolition of hanging in 1964 the Pierrepont family dominated the task of executing murderers and war criminals. Henry Albert (1876-1922) officiated from 1900-1911 with a record 20 executions in Britain in 1909 and the last double female execution (the baby farmers Mrs Amelia Sachs and Mrs Annie Walters) on 3 Feb 1903. The longest serving executioner has been his eldest brother Thomas Pierrepont from 1903 to 1948. Albert Pierrepont, son of Henry Albert, officiated at the hanging of 530 men and 20 women in his career in 9 countries including a record 27 war criminals in a day in Germany.

Lynching

The worst year in the 20th century for lynchings in the United States has been 1901, with 130 lynchings (105 Negroes, 25 Whites), while the first year with no reported cases was 1952. The last lynching recorded in Britain was that of Panglam Godolan, a suspected murderer, in London on 27 Oct 1958. The last case previous to this was of a kidnapping suspect in Glasgow in 1922.

Corporal punishment

The last use of corporal punishment in one of HM Prisons was on 26 June 1962 and it was abolished in the United Kingdom by the Criminal Justice Act, 1967. The treadmill which 14 prisons operated in 1878 was finally suspended on 1 Apr 1902. Men on the 36-man wheel at Northallerton, Yorkshire raised themselves 9639 ft 2937 m in an 8-hr day, equivalent to reaching within 111 ft 33.8 m of the summit of Everest in 3 days.

PRISON SENTENCES

Longest sentences World

A 10,000 year sentence was imposed on Dudley Wayne Kyzer, 40 on 4 Dec 1981 in Tuscaloosa, Alabama, USA for a triple

murder (including his mother-in-law) in 1976. A sentence of 384,912 years was *demandé* at the prosecution of Gabriel March Grandos, 22, at Palma de Mallorca, Spain on 11 Mar 1972 for failing to deliver 42,768 letters or 9 years per letter.

Juan Corona, a Mexican-American, was sentenced to 25 consecutive life terms, for murdering 25 farm workers in 1970-1 around Feather River, Yuba City, California, at Fairfield on 5 Feb 1973. His 20th century record was surpassed by Dean Corll (27) in 1974 and John Wayne Gacy (33 victims) in 1980.

United Kingdom

Robert Bates, 30, received 16 life sentences for his part in the Shankill butcher's murders of 1975-7 in Belfast from Lord Justice O'Donnell on 20 Feb 1979. It was recommended that he be held for the 'rest of his life'.

The longest single period served by a reprieved murderer in Great Britain this century was 40 years 11 months by John Watson Laurie, the Goat Fell or Arran murderer, who was reprieved on the grounds of insanity in November 1889 and who died in Perth Penitentiary on 4 Oct 1930.

The longest specific minimum period recommended by a judge under the Murder (Abolition of Death Penalty) Act 1965 has been 35 years in the case of Patrick Armstrong and Michael Hill on 22 Oct 1975 for pub bombings (7 killed, 99 injured) at Guildford and Woolwich in 1974.

The longest prison sentence ever passed under British law was one of three consecutive and two concurrent terms of 14 years, thus totalling 42 years, imposed on 3 May 1961 on George Blake *né* Behar (b. Rotterdam, 11 Nov 1922), for treachery. Blake, formerly UK vice-consul in Seoul, South Korea, had been converted to Communism during 34 months' internment there from 2 July 1950 to April 1953. It had been alleged that his betrayals may have cost the lives of up to 42 British agents. He was 'sprung' from Wormwood Scrubs Prison, Greater London, on 22 Oct 1966.

The longest single sentence passed on a woman under English law was 20 years for Mrs Lona Teresa Cohen *née* Petra (b. 1913) at the Old Bailey, City of London on 2 Mar 1961 for conspiring to commit a breach of the Official Secrets Act, 1911. The sentence of this KGB agent was remitted by the Foreign Secretary on no known lawful authority on 24 July 1969. Ward (see Most Prolific Murderers) was sentenced to 20 years for a single offence and an aggregate 30 years on 4 Nov 1974.

Longest time served

Paul Geidel, (b. 21 Apr 1894) was convicted of second degree murder on 5 Sept 1911 as a 17 year old porter in a New York Hotel. He was released from the Fishkill Correctional Facility, Beacon, New York aged 85 on 7 May 1980 having served 68 years 8 months and 2 days—the longest recorded term in US history. He first refused parole in 1974.

Longest in Broadmoor

The longest period for which any person has been detained in the Broadmoor hospital for the criminally insane, near Crowthorne, Berkshire, is 76 years in the case of William Giles. He was admitted as an insane arsonist at the age of 11 and died there on 10 Mar 1962, at the age of 87.

The longest escape from Broadmoor was one of 39 years by the Liverpool wife murderer James Kelly, who got away on 28 Jan 1888, using a pass key made from a corset spring. After an adventurous life in Paris, in New York and at sea he returned in April 1927, to ask for re-admission. After some difficulties this was arranged. He died in 1930.

Most appearances

There are no collated records on the greatest number of convictions on an individual but the highest recently reported is 1433 for the gentlemanly but alcoholic Edward Eugene Ebzery, who died in Brisbane Jail, Queensland, Australia on 23 Sept 1967.

Greatest mass arrests

The greatest mass arrest reported in a democratic country was of

more than 13,000 people in an anti-war demonstration designed to block rush-hour traffic in Washington DC, USA on 3-5 May 1971. The largest in the United Kingdom occurred on 17 Sept 1961, when 1314 demonstrators supporting unilateral nuclear disarmament were arrested for obstructing highways leading to Parliament Square, London, by sitting down. As a consequence of the 1926 General Strike there were 3149 prosecutions: incitement (1760) and violence (1389).

FINES

Heaviest World

It was reported in January 1979 that Carlo Ponti, husband of Sophia Loren, was to be fined the equivalent of \$26.4 million by the Italian courts in connection with claims for tax alleged to be due but unpaid.

UK

The heaviest fine ever imposed in the United Kingdom was one of £277,500 plus £3717 costs, by H. M. Customs and Excise on I. Hennig & Co. Ltd, the London diamond merchants, at Clerkenwell Magistrates' Court, London, on 14 Dec 1949. The amount was later reduced on appeal.

Rarest prosecution

There are a number of crimes in English law for which there have never been prosecutions. Among unique prosecutions are *Rex v. Crook* in 1662 for the praemunire of disputing the King's title and *Rex v. Gregory* for selling honours under the Honours (Prevention of Abuses) Act, 1924, on 18 Feb 1933. John Maundy Gregory (d. 3 Oct 1941 in France as 'Sir' 'Arthur' Gregory) was an honours broker during 6 administrations from 1919 to 1932 and was sentenced to two months in Wormwood Scrubs, London.

PRISONS

Largest Great Britain

The largest prison in Great Britain is Wormwood Scrubs, West London, with 1208 cells. The highest prison walls in Great Britain are those of Lancaster Prison measuring 36-52 ft 11-15.85 m.

The largest prison in Scotland is Barlinnie, Glasgow, with 753 single cells. Ireland's largest prison is Mountjoy Prison, Dublin, with 808 cells.

Penal camps

The largest penal camp systems in the world were those near Karaganda and Kolyma, in the USSR, each with a population estimated in 1958 at between 1,200,000 and 1,500,000. The largest labour camp is now said to be the Dubrovlag Complex of 15 camps centred on Pot'ma, Mordovian SSR. The official NATO estimate for all Soviet camps was 'more than one million' in March 1960 compared with a peak of probably 12 million during the Stalinist era.

Devil's Island

The largest French penal settlement was that of St Laurent du Maroni, which comprised the notorious Îles du Diable, Royale and St Joseph (for incorrigibles) off the coast of French Guiana, in South America. It remained in operation for 99 years from 1854 until the last group of repatriated prisoners, including Théodore Rouselle, who had served 50 years, was returned to Bordeaux on 22 Aug 1953. It has been estimated that barely 2000 *bagnards* (ex-convicts) of the 70,000 deportees ever returned. These, however, included the executioner Ladurelle (imprisoned 1921-37), who was murdered in Paris in 1938.

Highest population

The peak prison population, including Borstals and detention centres, for England and Wales was the figure for March 1980 with 44,223. In Scotland the prison population record was 5400 in 1972 and in Northern Ireland 2934 on 16 Nov 1975.

Most secure prison

After it became a maximum security Federal prison in 1934, no convict was known to have lived to tell of a successful escape from the prison of Alcatraz Island in San Francisco Bay, California, USA. A total of 23 men attempted it but 12 were recaptured, 5 shot dead, one drowned and 5 presumed drowned. On 16 Dec

1962, just before the prison was closed on 21 Mar 1963, one man reached the mainland alive, only to be recaptured on the spot. John Chase held the record with 26 years there.

Most expensive prison

Spandau Prison, Berlin, built 100 years ago for 600 prisoners is now used solely for the person widely and officially purported to be Nazi war criminal Rudolf Hess (b. 26 Apr 1894). The cost of maintenance of the staff of 105 has been estimated at \$415,000 (£245,000) per annum.

Longest escape

The longest recorded escape by a recaptured prisoner was that of Leonard T. Fristoe, 77, who escaped from Nevada State Prison, USA, on 15 Dec 1923 and was turned in by his son on 15 Nov 1969 at Compton, California. He had had 46 years of freedom under the name Claude R. Willis. He had killed two sheriff's deputies in 1920. The longest period of freedom achieved by a British gaol breaker is more than 24 years by Irish-born John Patrick Hannan, who escaped from Verne Open Prison at Portland, Dorset, on 22 Dec 1955 and was still at large in June 1980. He had served only 1 month of a 21-month term for car-stealing and assaulting two policemen.

Greatest gaol break

In February 1979 a retired US Army Colonel Arthur 'Bull' Simons led a band of 14 to break into Gasre prison, Tehran, Iran to rescue two fellow Americans. Some 11,000 other prisoners took advantage of this and the Islamic revolution in what became history's largest ever gaol break.

In July 1971, Raoul Sendic and 105 other Tupamaro guerrillas escaped from a Uruguayan prison through a tunnel 91 m 298 ft long.

The greatest gaol break in Britain was that from Brixton Prison, Lambeth, Greater London on 30 May 1973 when 20 men got out using a rubbish tipping lorry as a battering ram. Eighteen were captured immediately and one other 5 weeks later. Nine staff were injured.

6. ECONOMIC

MONETARY AND FINANCE

Largest budget World

The greatest annual expenditure budgeted by any country has been \$769,800 million (£427,700 million) by the United States

A symbol of the world's worst inflation. The Hungarian 10 million billion (10,000,000,000,000,000) pengo widely used in the summer of 1946 when the prices in Budapest were raised as often as 10 times in a day (see p. 225).



government for the fiscal year 1983. The highest budgeted revenue in the United States has been \$665,900 million (£370 million) for the fiscal year 1983.

In the United States, the greatest surplus was \$8,419,469 million in 1947-8, and the greatest budgeted deficit has been \$103,900 million (£57,720 million) in fiscal year 1983.

Largest budget United Kingdom

The greatest budgeted general government expenditure has been £131,500 million for the fiscal year 1982-83. The highest budgeted government receipts has been £121,500 million for the same fiscal year showing a General Government Borrowing requirement of £10,000 million.

Foreign aid

The total net foreign aid given by the United States government between 1 July 1945 and 1 Jan 1981 was \$187,696 million. The country which received most US aid in 1980 was Israel with \$1849 million. US foreign aid began with \$50,000 to Venezuela for earthquake relief in 1812.

Least taxed

The lowest income-taxed nations in the world include Bahrain, Kuwait and Qatar where the rate regardless of income is nil. No tax is levied on the Sarkese (inhabitants of Sark) in the Channel Islands.

Highest taxation rates

The country with the most confiscatory taxation is Norway where in January 1974 the Labour Party and Socialist Alliance abolished the 80 per cent limit. Some 2000 citizens were then listed in the *Lignings Boka* as paying more than 100 per cent of their taxable income. The shipping magnate Hilmer Reksten (1898-1980) was assessed at 491 per cent. In the United Kingdom the former top earned and unearned rates of 83 per cent and 98 per cent were reduced to 60 per cent and 75 per cent in the budget of 12 June 1979. The all-time record ruled in 1967-8 when a 'special charge' of up to 9s. (45p) in the £ additional surtax brought the top rate to 27s. 3d. (or 136%) in the £ on investment income.

Tax demands highest

The highest recorded tax demand is one for \$336 million (£164 million) for 70 per cent of the estate of Howard Hughes. The highest UK personal income tax demand raised is one for £2,900,000 on Nicholas Hoogstraten, 34 of London reported on 19 Feb 1981 and settled for £2,290,774 a year later. British Petroleum made a single payment of £910,200,000 in North Sea Taxes to the Inland Revenue on 1 Sept 1981.

Highest and lowest rates in Great Britain

Income tax was first introduced in Great Britain in 1799 for incomes above £60 per annum. It was discontinued in 1815, only to be re-introduced in 1842 at the rate of 7d. (2.91p) in the £. It was at its lowest at 2d. (0.83p) in the £ in 1875, gradually climbing to 1s. 3d. (6.24p) by 1913. From April 1941 until 1946 the record peak of 10s. (50p) in the £ was maintained to assist in the financing of World War II.

National Debt

The largest national debt of any country in the world is that of the United States, where the gross federal public debt of the Federal Government surpassed the 'half trillion' dollar mark in 1975 and reached \$1,011,111 million (£562,000 million) by October 1981. This amount in dollar bills would make a pile 54,800 miles 88 292 km high, weighing 768,627 tons 780 955 tonnes.

The National Debt in Great Britain was less than £1 million during the reign of James II in 1687. It was £117,959 million or £2117 per person at 31 Mar 1982. This amount placed in a pile of brand new £1 notes would be 7187.7 miles 11 567 km in height.

Most Foreign Debt

The country most heavily in overseas debt is Brazil with \$69,000 million.

Gross National Product

The country with the largest Gross National Product is the

United States reaching \$3 trillion (3×10^{12}) in 1981. The GNP of the United Kingdom at factor cost was £222,962 million for 1980–81.

National wealth

The richest nation, measured by average per caput, is the United Arab Emirates with \$30,070 in 1980. The USA which took the lead in 1910 was 14th behind 3 Arab, 9 West European countries and Brunei in 1980. The United Kingdom stood 25th with \$7920 (then £4400) per head. It has been estimated that the value of all physical assets in the USA in 1976 was \$6.2 trillion (10^{12}) or \$28,800 (£16,950) per head. The figure for private wealth in the United Kingdom was £325,000 million (1976) or £5811 per head.

Poorest country

The lowest published annual income per caput of any country in the world is Bhutan with a tentative \$80 (1980) but the World Bank has no data for Kampuchea, Laos, Somalia or Vietnam.

Gold reserves World

The country with the greatest monetary gold reserve is the United States, whose Treasury had 264.6 million fine oz of the world's 927.02 million fine oz on hand in January 1981. Valued at \$500 per fine oz, these amounts translate to \$132,300.0 million and \$463,510 million respectively. The United States Bullion Depository at Fort Knox, 30 miles 48 km south-west of Louisville, Kentucky, USA has been the principal Federal depository of US gold since Dec 1936. Gold is stored in 446,000 standard mint bars of 400 troy ounces 12,4414 kg measuring $7 \times 3\frac{3}{8} \times 1\frac{1}{8}$ in, $17.7 \times 9.2 \times 4.1$ cm. As at 1 Jan 1981 Fort Knox housed 147,300,000 fine oz 3436 tonnes or 55.66% of the United States total holding.

Gold and foreign currency reserves Great Britain

The lowest published figure for the sterling area's gold and convertible currency reserves was \$298,000,000 (then £74 million) on 31 Dec 1940. The valuation on 1 Apr 1981 was a peak \$28,212 million and the peak figure for gold was \$7334 million on 31 Dec 1981.

Minimum Lending Rate

The highest ever figure for the British bank rate (since 13 Oct 1972, the Minimum Lending Rate) has been 17 per cent from 15 Nov 1979 to 3rd July 1980. The longest period without a change was the 12 years 13 days from 26 Oct 1939 to 7 Nov 1951, during which time the rate stayed at 2 per cent. This record low rate was first attained on 22 Apr 1852.

Balance of Payments

The most unfavourable current balance of payments figure for the United Kingdom has been a deficit of £3591 million in 1974. The 4th quarter of 1979 was the worst with £1401 million. The greatest surplus for a quarter has been £616 million for the 4th quarter of 1978. Monthly figures are regarded as too erratic to be significant.

Worst inflation World

The world's worst inflation occurred in Hungary in June 1946, when the 1931 gold pengő was valued at 130 trillion (1.3×10^{20}) paper pengős. Notes were issued for szazmillio billion (100 trillion or 10^{20}) pengős on 3 June and withdrawn on 11 July 1946. Notes for 1000 trillion or 10^{21} pengős were printed but not circulated. On 6 Nov 1923 the circulation of Reichsbank marks reached 400,338,326,350,700,000,000 and inflation 755,700 million fold on 1913 levels. Inflation in Israel in 1980 ran at 135 per cent and was thus ahead of Turkey and Argentina.

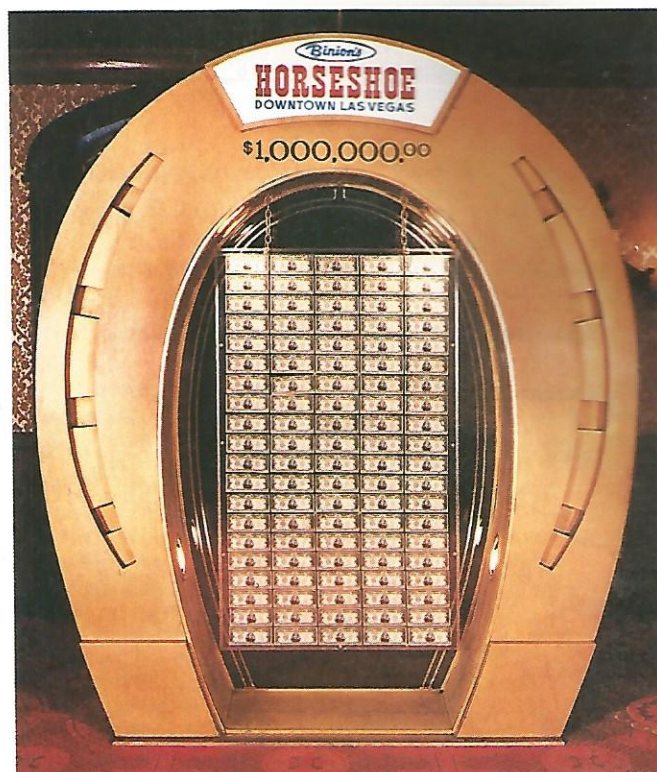
Worst inflation Great Britain

The United Kingdom's worst rate in a year has been for August 1974 to August 1975 when inflation ran at a rate of 26.9 per cent compared with 9.2 per cent for June 1981 to June 1982. The Tax and Price Index (allowing for tax reliefs) was 18.4 per cent. The peak TPI extrapolated figure was 31.9 per cent in August 1975.

PAPER MONEY

Earliest

Paper money is an invention of the Chinese first tried in AD 910 and prevalent by AD 970. The world's earliest bank notes (*banco-*



A quarter of all the world's surviving highest denomination banknotes—a million dollars worth of \$10,000 banknotes in the capital of gambling, Las Vegas, Nevada, USA. Having them in a frame keeps them safer from hi-rollers.

sedlar) were issued in Stockholm, Sweden, in July 1661. The oldest surviving banknote is one for 5 dalers dated 6 Dec 1662. The oldest surviving printed Bank of England note is one for £555 to bearer, dated 19 Dec 1699 ($4\frac{1}{2} \times 7\frac{1}{2}$ in, 11.4×19.6 cm).

Largest and smallest

The largest paper money ever issued was the one kwan note of the Chinese Ming dynasty issue of 1368–99, which measured 9×13 in 22.8×33.0 cm. The smallest note ever issued by a bank was the 10 bani note of the Ministry of Finance of Romania, issued in 1917. It measured (printed area) 27.5×38 mm 1.09×1.49 in. Of German *notgeld* the smallest are the 1–3 pf of Passau (1920–21) measuring 18×18.5 mm 0.70×0.72 in.

Highest denominations World

The highest denomination notes in circulation are US Federal Reserve Bank notes for \$10,000 (£5260). They bear the head of Salmon Portland Chase (1808–73). None has been printed since July 1944 and the US Treasury announced in 1969 that no further notes higher than \$100 would be issued. Only some 400 \$10,000 bills remain in circulation.

Great Britain

Two Bank of England notes for £1,000,000 still exist, dated before 1812, but these were used only for internal accounting. In November 1977 the existence of a Treasury £1 million note dated 30 Aug 1948 came to light and was sold by private treaty for \$A18,500 (then £11,300) in Australia.

The highest issued denominations were £1000 notes, first printed in 1725, discontinued on 22 Apr 1943 and withdrawn on 30 Apr 1945. A total of 16 of these notes were still unretired up to Nov 1979 (last data to be published). Of these perhaps 10 are in the hands of collectors or dealers.

Lowest denomination World

The lowest denomination legal tender bank note is the 1 sen (or 1/100th of a rupiah) Indonesian note. Its exchange value in mid-1982 was 117 to the new penny.

COINS

World

British

Oldest	c. 670 BC electrum staters of King Gyges of Lydia, Turkey ¹	c. 95 BC Westerham type gold stater (51 known) ²
Earliest Dated	MCCXXXIII (1234) Bishop of Roskilde coins, Denmark (6 known)	1539 James V of Scotland silver 'bonnet piece'.
Heaviest	19,710 kg 43 lb 7¼ oz Swedish 10 daler copper plate 1644 ³	39.94 g 1.4066 oz Gold £5 piece latest mintage of 10,000 dated 1980
Lightest and Smallest	0.002 g or 14,000 to the oz Nepalese silver ¼ Jawa c. 1740	7.27 grains or 61 to the oz Maundy silver one penny piece since 1822
Most Expensive	\$725,000 (then £329,500) for the uncirculated Garrett gold Brasher doubloon of 1787 in New York	£55,000 James VI Scottish £20 piece of 1576. Sold by Spence & Son, London on 1 May 1981
Rarest	Many 'singletons' known e.g. Only 700 Axumite coins known of which only one of bronze and gold of Kaleb I c. AD 500	Unique: 1889 Victoria ¼d; 1952 George VI half-crown; 1954 Elizabeth II 1d sold in March 1978 for £23,000



- ¹ Chinese unscripted 'spade' money of the Chou dynasty has been dated to c. 770 BC
² Bellovaci type gold staters from Northern France circulated as early as c. 130 BC
³ The largest coin-shaped coin was the 200 Mohur Indian gold coin of 1654 5½ in 136 mm in diameter weighing 70 troy oz 2177 g

far left: The obverse of the unique Axumite coin from Ethiopia. *left:* The reverse of the highest denomination legal tender coin—United Kingdom Elizabeth II £5 gold piece of 1980.

Great Britain

The lowest denomination Bank of England notes ever printed were half-crown (now 12½p) black on pale blue notes in 1941, signed by K. O. Peppiatt. Very few examples have survived and they are now valued at from £750.

Highest circulation

The highest ever Bank of England note circulation in the United Kingdom was £11,865,799,605 on 23 Dec 1981—equivalent to a pile of £1 notes 589.78 miles 949.15 km high.

CHEQUES

Largest World

The greatest amount paid by a single cheque in the history of banking has been one for Rs. 16,640,000,000 equivalent to £852,791,660 handed over by Hon. Daniel P. Moynihan, Ambassador of the USA to India in New Delhi on 18 Feb 1974. An internal US Treasury cheque for \$4,176,969,623.57 was drawn on 30 June 1954.

Largest Great Britain

The largest cheque drawn in Britain was one for £590,700,000 drawn on 27 Feb 1981 by British Petroleum Oil Development Ltd, payable to the Inland Revenue and signed in a ballpoint pen by David Cobbold.

Greatest collection

The highest price paid for a coin collection has been \$7,300,000 (then £3,550,000) for a hoard of 407,000 US silver dollars from the La Vere Redfield estate in a courtroom auction in Reno, Nevada on 27 Jan 1976 by Steven C. Markoff of A-Mark Coin Co. Inc. of Beverly Hills, California.

Largest hoards

The largest hoard ever found was one of about 80,000 aurei in Bronzello near Modena, Italy in 1814 believed to have been deposited c. 37 BC. The numerically largest hoard ever found was the Brussels hoard of 1908 containing c. 150,000 coins. A hoard of 56,500 Roman coins was found at Cunetio near Marlborough, Wiltshire on 15 Oct 1978.

The greatest discovery of treasure is the estimated \$2000 million

of gold coins and platinum ingots from the sunken Tsarist battleship *Admiral Nakhimov* 8524 tons/tonnes 200 ft 60 m down off the Japanese island of Tsushima. She sank on 27 May 1905.

Largest mint

The largest mint in the world is the US Treasury's mint built in 1965-9 on Independence Mall, Philadelphia, covering 11½ acres 4.65 ha with an annual capacity on a 3 shift 7-day week production of 8000 million coins. A single stamping machine can produce coins at a rate of 10,000 per hour.

Charity Fund Raising

The greatest recorded amount raised by a charity walk or run is (Can)\$24.7 million by Terry Fox (1958-81) of Canada who ran from St John's, Newfoundland to Thunder Bay, Ontario with an artificial leg in 143 days from 12 Apr-2 Sept 1980. He covered 5373 km 3339 miles.

Largest charity collection

The most valuable column of coins amassed for charity was a column of 10p pieces worth £5119.70 created by the crew of HMS Churchill between 15-22 July 1981 at Denham, Bucks, for the Licensed Victuallers' National Homes. The longest line of coins is 4.26 miles 6.86 km (264,800 coins) in length laid by pupils and staff at Marlwood School, Alveston, Bristol and by members of Clifton Rugby Club, Bristol on 13 Sept 1981. This was also the highest value line and amounted to £5296 which was donated to the British Institute for Brain Injured Children.

LABOUR

Trade union Oldest Great Britain

The oldest of the 108 trade unions affiliated to the Trades Union Congress (founded 1868) is the National Society of Brush-makers and General Workers (current membership 1505) founded in 1747.

Trade union Largest World

The world's largest union has been Solidarność (Solidarity) in Poland which by October 1980 was reported to have 8,000,000 members. The union with the longest name is probably the International Association of Marble, Stone and Stone Polishers, Rubbers and Sawyers, Tile and

Marble Setters' Helpers and Marble Mosaic and Terrazzo Workers Helpers of Washington DC, USA.

Trade union Largest Great Britain

The largest union in the United Kingdom is the Transport and General Workers' Union, with 1,886,971 members at April 1982. Their peak membership was 2,086,281 in 1979.

Trade union Smallest

The smallest TUC affiliated unions are the Wool Shear Workers' Trade Union of Sheffield and the Cloth Pressers Society with a membership of 26 and 25 respectively. The unaffiliated London Handforged Spoon and Fork Makers' Society instituted in July 1874, has a last reported membership of 6.

Labour dispute Earliest

A labour dispute concerning monotony of diet and working conditions was recorded in 1153 BC in Thebes, Egypt. The earliest recorded strike was one by an orchestra leader from Greece named Aristos in Rome c. 309 BC. The cause was meal breaks.

Labour dispute Largest

The most serious single labour dispute in the United Kingdom was the General Strike of 4-12 May 1926, called by the Trades Union Congress in support of the Miners' Federation. During the nine days of the strike 1,580,000 people were involved and 14,500,000 working days were lost.

During the year 1926 a total of 2,750,000 people were involved in 323 different labour disputes and the working days lost during the year amounted to 162,300,000, the highest figure ever recorded. The figure for 1981 was 4,196,000 working days involving 1437 stoppages.

Labour dispute Longest

The world's longest recorded strike ended on 4 Jan 1961, after 33 years. It concerned the employment of barbers' assistants in Copenhagen, Denmark. The longest recorded major strike was that at the plumbing fixtures factory of the Kohler Co. in Sheboygan, Wisconsin, USA, between April 1954 and October 1962. The strike is alleged to have cost the United Automobile Workers' Union about \$12,000,000 (then £4.8 million) to sustain.

Unemployment Highest

The highest recorded percentage unemployment in Great Britain was on 23 Jan 1933, when the total of unemployed persons on the Employment Exchange registers was 2,903,065, representing 22.8% of the insured working population. The highest figure for the post-war period was 13.4% (3,190,621) on 20 July 1982.

Unemployment Lowest

In Switzerland in December 1973 (pop. 6.6 million), the total number of unemployed was reported to be 81. The lowest

Chairman of the Licensed Victuallers National Homes, Roy Mayes, with the most valuable column of coins ever stacked (see p. 226). (Stanmore Studios)



recorded peace-time level of unemployment in Britain was 0.9 per cent on 11 July 1955, when 184,929 persons were registered. The peak figure for the total working population in the United Kingdom has been 26,503,000 in September 1977.

Association Largest

The largest single association in the world is the Blue Cross system, the US-based hospital insurance organization with a membership of 83,175,817 on 1 Jan 1982. Benefits paid out in 1981 totalled \$24,032,048,000 (£13,351 million). The largest association in the United Kingdom is the Automobile Association (formed 1905) with a membership which reached 5,309,400 on 1 Jan 1982.

Oldest Club

Britain's oldest gentleman's club is White's, St James', London, opened c. 1697 by Francis White (d. 1711), as a Chocolate House, and moved to its present site in 37 St. James's in 1755. This has been described as an 'oasis in a desert of democracy'. Britain's oldest known dining club is the 'Corporation of St Pancras' of Chichester, West Sussex, known as The Wheelbarrow Club. It was formed on 4 Aug 1689 and is still in being.

CONSUMPTION

Prohibition

The longest lasting imposition of prohibition has been 26 years in Iceland (1908-34). Other prohibitions have been Russia, later USSR (1914-24) and USA (1920-33). The Faeroe Islands have had a public (as opposed to private licensed) prohibition since 1918. By way of contrast the Northern Territory of Australia's annual intake has been estimated to be as high as 416 pints 236 litres per person. A society for the prevention of alcoholism in Darwin had to disband in June 1966 for lack of support. It is perhaps noteworthy that the only parliamentary candidate on record in Britain ever to receive a nil vote was Mr F. R. Lees, who described himself as a Temperance Chartist.

Biggest round

The largest round of drinks ever recorded was one for 1222 people stood by the *Sunday Sun* and shouted by Jack Amos in Newcastle upon Tyne, England, in October 1974 at the conclusion of the Jack o' Clubs road show.

Largest dish

The largest menu item in the world is roasted camel, prepared occasionally for Bedouin wedding feasts. Cooked eggs are stuffed in fish, the fish stuffed in cooked chickens, the chickens stuffed into a roasted sheep carcass and the sheep stuffed into a whole camel.

Most expensive food

The most expensively priced food (as opposed to spice) is Royal de luxe caviar retailed at £224.50 per 500 grams 17.6 oz at Fortnum and Mason, London W.1

Longest banana split

The longest banana split ever made was one of 8006 ft 2440.2 m (over 1½ miles) in length embracing 11,840 bananas, 865¼ gal 3933 litres of ice cream, 152½ gal 693 litres of topping, 204 lb 92.53 kg of nuts and 8400 cherries by the Selinsgrove High School Band Boosters of Selinsgrove, Pennsylvania, USA on 1 May 1982.

Largest barbecue

The most monumental barbecue has been one for 10,335 people at the West Pasco Sertoma Club of New Port Richey, Florida on 28-29 Mar 1981 serving 8274 lb 3753 kg of meat. The 1981 annual Lancaster Sertoma in Pennsylvania, USA served 22,500 barbecued chickens.

Largest beefburger

The largest beefburger on record is one of 3020 lb 1369 kg served in 13,083 portions in City Park, Towner, 'Cattle Capitol of North Dakota', USA on 19 June 1981.

Largest cake

The largest cake ever assembled was the Baltimore City Bicentennial Cake on 4 July 1976 with ingredients weighing 69,860 lb or 31.18 tons 31.69 tonnes. An estimated 10,000 dozen eggs,

World's greatest consumers

Of all the countries in the world, based on the latest available data, Belgium-Luxembourg has the largest available total of calories per person. The net supply averaged 3645 per day in 1974. The United Kingdom average was 3349 per day in 1974. The lowest reported supply figures are 1728 calories per day in Upper Volta in 1974. It has been estimated that Britons eat 7¼ times their own weight in food per annum or 70,000 tons/tonnes per day. The highest calorific value of any foodstuff is that of pure animal fat with 930 calories per 100 g 3.5 oz. Pure alcohol provides 710 calories per 100 g.

Below. The World's greatest consumers per head, per day. Figures in square brackets refer to UK consumption.

PROTEIN

Australia and New Zealand
106 g 3.79 oz (1969)
[88 g 3.1 oz (1968-9)]

CEREALS¹

Egypt—600 g 21.95 oz
(1966-7) [7.14 oz 202 g
(1977)]

SUGARS

Bulgaria—177 g 6.26 oz
(1977) [4.1 oz 116 g
(1977)]

MEAT

USA—308 g 10.89 oz
(1977) [193 g 6.8 oz
(1977)]

SWEETS

Britain—1.20 oz 4.01 g
(1979)

TEA²

Ireland—0.36 oz 10.2 g (1977)
[0.285 oz 8.09 g (1981)]

COFFEE³

Finland—36.52 g 1.28 oz
(1980) [5.75 g 0.20 oz
(1980)]

WATER

USA—1544 gal
7021 l (1974)

BEER

W. Germany—40.2 cl
0.708 pints (1981)
[0.537 pints 30.5 cl (1981)]

WINE

France—25.1 cl 0.44 pints
(1980) [0.030 pints 1.7 cl
(1978)]

SPIRITS

Poland—1.53 cl 0.026 pints
(1978) [0.008 pints 0.47 cl
(1978)]

¹ Figures for 1977 from China suggest a possible consumption (including rice) of 890 g 31.3 oz.

² The most expensive tea marketed in the UK is 'Oolong Leaf Bud', specially imported for Fortnum & Mason of Piccadilly, City of Westminster, London. In July 1982 it retailed for £19.20 per lb or £4.23/100 g. It is blended from very young Formosan leaves. Tea-bags were invented by Thomas Sullivan of New York in 1904.

³ The most expensive coffee in the US is Jamaican Blue Mountain which retails for up to \$23 per lb (£12.70 per lb £28.16 per kg).

21,600 lb 9797 kg of sugar and a 415 lb 188 kg pinch of salt were used. The tallest recorded free-standing wedding cake was one of 46 tiers 33 ft 9 in 10.28 m tall baked and constructed by the Butterworth for Personnel Pool of America in September 1980 at Fort Lauderdale, Florida, USA.

Largest Easter egg

The largest Easter egg ever made was one weighing 343 lb 7561 lb 13½ oz, measuring 10 ft 3.04 m high, made by Siegfried Berndt at 'Macopa' Patisserie, Leicester, England and completed on 7 Apr 1982.

Largest haggis

The largest haggis (encased in 7 ox stomach linings) on record was one weighing 541½ lb 245.6 kg for the CWS Hypermarket of Glasgow, Scotland by David A. Hall Ltd. of Broomhall, Lothian, Scotland. The cooking time was 12 hr.

Longest loaf

The longest one-piece loaf ever baked was one of 1256 ft 382.9 m created by Bruce Gajewski and baked on the campus of Schenectady County Community College, NY, USA, in an open charcoal oven on 15 May 1982.

Largest apple pie

The largest apple pie ever baked was that in a 16 ft 8 in 5.09 m diameter dish at the Orleans Country Fair, New York State, USA on 2-3 Aug 1977. Baking time of the 300 bushels of apples and 5950 lb 2,698 tonnes of sugar was 4 hr 40 min. The total weight was 21,210 lb 9,62 tonnes.

Largest cherry pie

The largest cherry pie ever made was one weighing a total of 6¼ tons 6350 kg and containing 4950 lb 2245 kg of cherries. It measured 14 ft 4 in 4.36 m in diameter, 24 in 60.96 cm in depth, and was baked in the grounds of the Medusa Cement Corporation, Charlevoix, Michigan on 15 May 1976, as part of the town's contribution to America's Bicentennial celebrations.

Largest meat pie

The largest meat pie ever baked weighed 5¾ tons, measuring 18 × 6 ft and 18 in deep 5.48 × 1.83 × 0.45 m, the eighth in the series of Denby Dale, West Yorkshire pies, to mark five royal births, baked on 5 Sept 1964. The first was in 1788 to celebrate King George III's return to sanity, but the fourth (Queen Victoria's Jubilee, 1887) went a bit 'off' and had to be buried in quick-lime.

Largest mince pie

The largest mince pie recorded was one of 2260 lb 1025 kg 20 × 5 ft 6.09 × 1.52 m, baked at Ashby-de-la-Zouch, Leicestershire on 15 Oct 1932.

Largest omelette

The largest omelette in the world was one made of 20,117 eggs on a pan measuring 30 × 10 ft 9.1 × 3.04 m cooked by CHOI Radio, Calgary, and the Alberta Egg and Fowl Marketing Board on 27 June 1981 at Calgary's Southcentre Mall, Alberta, Canada.

Longest pastry

The longest cream slice (*mille feuilles* invented in Florence in the 16th century) ever made was one 330.41 m 1084 ft long by Franz Strübin-Keller and the Bäckermeisterkegelclub in Liestel, Switzerland on 10 June 1979.

Largest pizza pie

The largest pizza ever baked was one measuring 80 ft 1 in 24.4 m in diameter, hence 5037 ft² 468 m² in area and 18,664 lb 8465 kg in weight at the Oma Pizza Restaurant, Glen Falls, New York, USA owned by Lorenzo Amato on 8 Oct 1978. It was cut into 60,318 slices.

Potato mash

A single serving of 10,286 lb 4,66 tonnes of potato mash was prepared at the Mantua Potato Festival, Ohio, USA in September 1980.

Largest iced lollipop

The world's largest iced lollipop was one of 5750 lb 2608 kg con-

structed for the Westside Assembly of God Church, Davenport, Iowa, USA on 7 Sept 1975.

Blackpool rock

The mightiest piece of Blackpool lettered rock ever produced was a piece weighing more than 3 cwt 152 kg delivered on 16 Apr 1975 to the Royal Variety Club of Great Britain in London by Ashton Candy Co. Ltd. of Blackpool.

Largest salami

The largest salami on record was one 8,91 m 29 ft 2³/₄ in long with a circumference of 71 cm 28 in, weighing 333 kg 734.13 lb made by Don Smallgoods for Australian Safeway Stores at Broadmeadows, Vic on 23 Apr 1982.

Longest sausage

The longest continuous sausage ever made was one of 4607,76 m 2.86 miles weighing 1979,5 kg 1.94 tons by Auckland Farmers' Freezing Cooperative Ltd, New Zealand on 26 June 1981.

Strawberry Bowl

The largest bowl of strawberries with a net weight of 349¹/₂ lb 158,5 kg was served with 10 gallons 45 litres of cream to 1500 people at the Greathouse Cheshire Home, Kington Langley, Wiltshire on 11 July 1981.

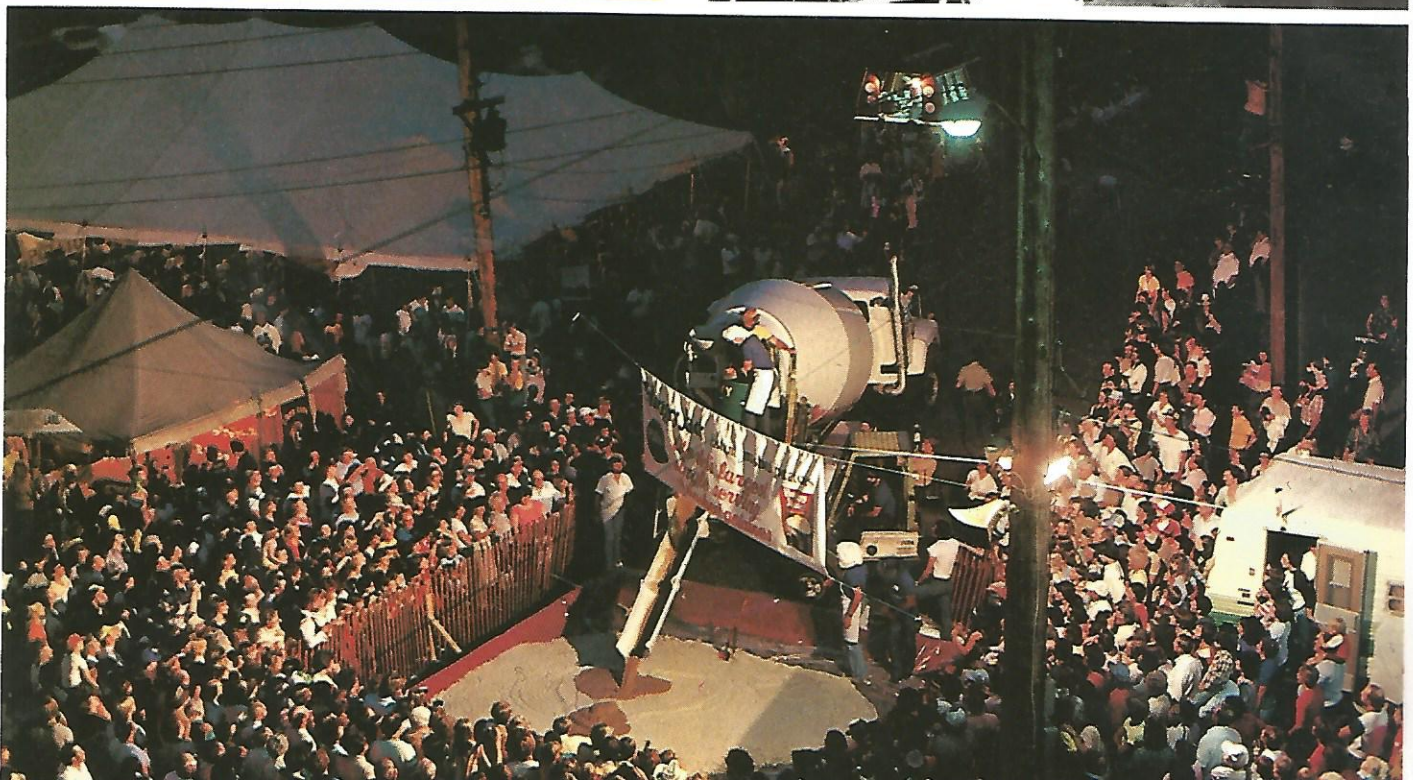
Largest sundae

The largest ice cream sundae ever concocted is one of 10,808 lb 4902,40 kg plus 180 lb 81,64 kg of strawberries, 100 lb 45,35 kg of nuts and 16 gal 72,73 litres of whipped topping constructed by the Friendly Ice Cream Co and students from the High School at Troy, Ohio, USA on 8 June 1980.

Largest Yorkshire pudding

The largest Yorkshire pudding on record is one measuring 18 ft 6 in × 3 ft 11 in 5,63 × 1,19 m baked for 4³/₄ hr at the Swan's Nest Hotel, Stratford-upon-Avon, Warwickshire by Bob Wyatt and Kevin Fernley on 28 Nov 1981.

right: The world's tallest wedding story—the 46 storey 33 ft 9 in 10,28 m wedding cake built in Fort Lauderdale 1981. below: The largest ever serving of mashed potato, over 4¹/₂ tons prepared at the Mantua Potato Festival, Ohio (see p. 228).



Top selling sweet

The world's top selling sweets (candies) are Life Savers with 29,651,840,000 rolls between 1913 and 30 June 1980. A tunnel formed by the holes in the middle placed end to end would stretch to the moon and back 3 times. Paul Shirley, 21, of Sydney made one last for 4 hr 40 min on 15 Feb 1979.

Spice Most expensive

Prices for wild ginseng (root of *Panax quinquefolius*), from the Chan Pak Mountain area of China thought to have aphrodisiac qualities were reported in November 1977 to be as high as \$23,000 (then £10,454) per ounce in Hong Kong. Total annual shipments from Jilin Province do not exceed 4 kg 140 oz a year. The leading medical journal in the USA has likened its effects to 'corticosteroid poisoning'.

Spice 'Hottest'

The hottest of all spices is claimed to be Siling labuyo from the Philippines.

Most Expensive fruit

On 5 Apr 1977 John Synnott of Ashford, Co. Wicklow, Ireland sold 1 lb 453 g of strawberries (a punnet of 30 berries) to the restaurateur, Mr Leslie Cooke, at auction by Walter L. Cole Ltd. in the Dublin Fruit Market for £530 or £17.70 a berry.

Rarest condiment

The world's most prized condiment is Cà Cuong, a secretion recovered in minute amounts from beetles in northern Vietnam. Owing to war conditions, the price rose to \$100 (now £57) per ounce 28 g before supplies virtually ceased in 1975.

ENERGY CONSUMPTION

To express the various forms of available energy (coal, liquid fuels and water power, etc., but omitting vegetable fuels and peat), it is the practice to convert them all into terms of coal.

The highest consumption in the world is in the United States, with an average of 13 240 kg 260.1 cwt per person. With only 5.3 per cent of the world's population the US consumes 28.6 per cent of the world's gasoline and 32.9 per cent of the world's electric power. The United Kingdom average was 6365 kg 125.2 cwt per person in 1979. The lowest recorded average for 1974 was 13 kg 28.6 lb per person in Rwanda.

MASS COMMUNICATIONS

Airline

The country with the busiest airlines system is the United States of America where 200,086,577,000 revenue passenger miles were flown on scheduled domestic and local services in 1980.

Making the first ever traverse of the Tapon del Darién in Panama in the 1959-60 Trans-Darién Expedition. The drivers were Richard Bevir and Terence Whitfield (see p. 231). (T. J. Whitfield)



This was equivalent to an annual trip of 833 miles 1340 km for every one of the inhabitants of the USA. It was estimated in 1980 that only 37% of adult Americans had not flown in their lives. The United Kingdom airlines flew 595 244 000 miles 369,866,760 miles and carried 35,121,272 passengers on all services excluding Air Taxi operations in 1981.

Merchant shipping

The world total of merchant shipping, excluding vessels of less than 100 tons gross, sailing vessels and barges, was 73,864 vessels of 420,834,813 tons gross on 1 July 1981. The largest merchant fleet in the world as at mid-1981 was that under the flag of Liberia with 2281 ships of 74,906,390 tons gross. The figure for mid-1981 was 2975 ships of 25,419,427 tons gross.

Largest and busiest ports

Physically, the largest port in the world is the Port of New York and New Jersey, USA. The port has a navigable waterfront of 755 miles 1215 km (295 miles 474 km in New Jersey) stretching over 92 miles² 238 km². A total of 261 general cargo berths and 130 other piers give a total berthing capacity of 391 ships at any time. The total warehousing floor space is 422.4 acres 170.9 ha. The world's busiest port and largest artificial harbour is the Rotterdam-Europoort in the Netherlands which covers 38 miles² 100 km². It handled 29,136 sea-going vessels carrying a total of 253 million tonnes of sea-going cargo, and about 180,000 barges in 1981. It is able to handle 310 sea-going vessels simultaneously of up to 318,000 tonnes and 68 ft 20,72 m draught.

Railways

The country with the greatest length of railway is the United States, with 198,963 miles 320 200 km of track at 1 Jan 1980. The farthest anyone can get from a railway on the mainland island of Great Britain is 110 miles 177 km by road in the case of Southend, Mull of Kintyre.

The number of journeys made on British Rail in 1981 was 718,488,000 (average 26.6 miles 42.8 km) compared with the peak year of 1957, when 1101 million journeys (average 20.51 miles 33 km) were made.

Road Oldest

The oldest trackway yet discovered in the world is the Sweet track, Shapwick, Somerset which has been dated to 4000 BC. The first sod on Britain's first motorway, the M6 Preston Bypass, was cut by bulldozer driver Fred Hackett on 12 June 1958 on the section between junctions 29 and 32 opened in December 1958.

Road Mileages

The country with the greatest length of road is the United States (all 50 States), with 3,884,732 miles 6 251 700 km of graded roads at 1 Jan 1979. Regular driving licences are issuable at 15 without a driver education course only in Hawaii and Mississippi. Thirteen US States issue restricted juvenile licences at 14.

The United Kingdom has 224,612 miles 361 401 km of roads including 1537 miles 2474 km of motorway at 1 Apr 1979 and 18,625,000 vehicles in 1980.

The \$3500 million Interstate 75, opened on 21 Dec 1977, now runs 1564 miles 2517 km from Sault St Marie, Michigan to Tampa, Florida without a traffic light. The Interstate Highway I-80 for New York City to Salt Lake City, Utah is 2180 miles 3508 km long. Britain's longest uninterrupted dual carriageway is from Plymouth to Exeter (A38) and thence by the M5 and M6 for 515 miles 829 km terminating at Dunblane Fourways Restaurant.

Traffic volume Highest

The highest traffic volume of any point in the world is at the East Los Angeles interchange (Santa Ana, Pomona, Golden State and Santa Monica Freeways), California, USA with a 24-hr average on weekdays of 550,300 vehicles in 1981—over 382 per minute. The most heavily travelled stretch of road is between 43rd and 47th Street on the Dan Ryan Expressway, Chicago with an average daily volume of 254,700 vehicles.

The territory with the highest traffic density in the world is Hong Kong. By 1 Jan 1977 there were 191,146 motor vehicles on

678 miles 1091 km of serviceable roads giving a density of 6.24 yd 5,70 m per vehicle. The comparative figure for Great Britain in 1979 was 21.2 yd 19,40 m.

The greatest traffic density at any one point in Great Britain is at Hyde Park Corner, London. The average daytime 8 a.m.–8 p.m. flow in 1970 (last census) was 164,338 vehicles every 12 hr. The busiest Thames bridge in 1976 was Putney Bridge, with a 24-hr average of 63,000 vehicles. The greatest reported aggregation of London buses was 52, bumper to bumper, along Oxford Street on 13 Feb 1976.

Traffic jams *Largest*

The longest traffic jam ever reported was that of 16 Feb 1980 which stretched northwards from Lyon 176 km 109.3 miles towards Paris. The longest traffic jam reported in Britain was one of 35 miles 56 km out of 42.5 miles 75,6 km road length between Torquay and Yacombe, Devon, on 25 July 1964 and 35 miles 56 km on the A30 between Egham, Surrey and Michel-dever, Hampshire on 23 May 1970.

Road *Widest*

The widest street in the world is the Monumental Axis running for 1½ miles 2,4 km from the Municipal Plaza to the Plaza of the Three Powers in Brasilia, the capital of Brazil. The six-lane Boulevard was opened in April 1960 and is 250 m 273.4 yd wide. The San Francisco–Oakland Bay Bridge Toll Plaza has 23 lanes (17 west bound) serving the Bridge in Oakland, California.

The only instance of 17 carriageway lanes side by side in Britain occurs on the M61 at Linnyslaw Moss, Worsley, Greater Manchester.

Road *Narrowest*

The world's narrowest street is in Port Isaac, Cornwall at the junction of Temple Bar and Dolphin Street. It is popularly known as 'Squeeze-belly alley' and is 19½ in 49 cm wide at its narrowest point.

Road *Longest*

The longest motorable road in the world is the Pan-American Highway, which will stretch 17,018 miles 27 387 km from North West Alaska to southernmost Chile. There remains a gap known as the Tapon del Darién, in Panama and the Atrato Swamp, Colombia. This was first traversed by the land rover La Cucaracha Carinosa (The Affectionate Cockroach) of the Trans-Darien Expedition 1959–60 crewed by former SAS man Richard E Bevir (UK) and engineer Terence John Whitfield (Australia). They left Chepo, Panama on 3 Feb 1960 and reached Quibdó, Colombia on 17 June averaging 220 yd 201 m per hour of indescribable difficulty. The Range Rover VXC 868K of the British Trans-Americas Expedition was the first vehicle to cover the whole route leaving Alaska on 3 Dec 1971 and arriving in Tierra del Fuego on 9 June 1972.

Most complex interchange

The most complex interchange on the British road system is that at Gravelly Hill, north of Birmingham on the Midland Link Motorway section of the M6 opened on 24 May 1972. There are 18 routes on 6 levels together with a diverted canal and river, which consumed 26,000 tons/tonnes of steel, 250,000 tons/tonnes of concrete, 300,000 tons/tonnes of earth and cost £8,200,000.

Street *Longest World*

The longest designated street in the world is Yonge Street running north and west from Toronto, Canada. The first stretch completed on 16 Feb 1796 ran 34 miles 53 chains 55,783 km. Its official length now extended to Rainy River at the Ontario–Minnesota border is 1178.3 miles 1896,2 km

Longest Great Britain and Commonest Name

The longest designated road in Great Britain is the A1 from London to Edinburgh of 404 miles 650 km. The longest Roman roads were Watling Street, from Dubrae (Dover) 215 miles 346 km through Londinium (London) to Viroconium (Wroxeter), and Fosse Way, which ran 218 miles 350 km from Lindum (Lincoln) through Aquae Sulis (Bath) to Isca Dumnoniorum (Exeter). However, a 10 mile 16 km section of Fosse Way between Ilchester and Seaton remains indistinct. The commonest

street name in Greater London is High Street (122) followed by Station Road (100).

Shortest

The title of 'The Shortest Street in the World' has been claimed since 1907 by McKinley Street in Bellefontaine, Ohio, USA built of 'vitrified brick' and measuring 30 ft 9,14 m in length. The shortest reported measurement of a street in Britain is 58 ft 17,67 m of Tolbooth Street, Falkirk, Central, Scotland.

Steepest

The steepest streets in the world are Filbert Street, Russian Hill and 22nd Street, Dolores Heights, San Francisco with gradients of 31.5 per cent or 1 in 3.17. Lombard Street between Leavenworth and Hyde with 8 consecutive 90 degree turns of 20 ft 6,1 m radius is described as the 'Crookedest street in the world'. Britain's steepest motorable road is the unclassified Chimney Bank which is signposted '1 in 3' at Rosedale Abbey, North Yorkshire. The County Surveyor states it is 'not quite' a 33 per cent gradient. Of the five unclassified roads with 1 in 3 gradients the most severe is Hard Knott Pass between Boot and Ambleside, Cumbria.

Longest hill

The longest steep hill on any road in the United Kingdom is on the road westwards from Lochcarron towards Applecross in Highland, Scotland. In 6 miles 9,6 km this road rises from sea-level to 2054 ft 626 m with an average gradient of 1 in 15.4, the steepest part being 1 in 4.

Road *Highest World*

The highest trail in the world is an 8 mile 13 km stretch of the Kang-ti-suu between Khaleb and Hsin-chi-fu, Tibet which in two places exceeds 20,000 ft 6080 m. The highest carriageable road in the world is one 1180 km 733.2 miles long between Tibet and south western Sinkiang, completed in October 1957, which takes in passes of an altitude up to 18,480 ft 5632 m above sea-level. Europe's highest pass (excluding the Caucasian passes) is the Col de Restefond (9193 ft 2802 m) completed in 1962 with 21 hairpins between Jausiers and Saint Etienne-de-Tinée, France. It is usually closed between early October and early June. The highest motor road in Europe is the Pico de Veleta in the Sierra Nevada, southern Spain. The shadeless climb of 36 km 22.4 miles brings the motorist to 11,384 ft 3469 m above sea-level and became, on completion of a road on its southern side in Summer 1974, arguably Europe's highest 'pass'.

Highest Great Britain

The highest road in the United Kingdom is the A6293 unclassified tarmac, private extension at Great Dun Fell, Cumbria, (2780 ft 847 m) leading to a Ministry of Defence and Air Traffic Control installation. A permit is required to use it. The highest public classified road in England is the A689 at Killhope Cross (2056 ft 626 m) on the Cumbria–Durham border near Nenthead. The highest classified road in Scotland is the A93 road over the Grampians through Cairnwell, a pass between Blairgowrie, Tayside, and Braemar, Grampian, which reaches a height of 2199 ft 670 m. The highest classified road in Wales is the Rhondda-Afan Inter-Valley road (A4107), which reaches 1750 ft 533 m 2½ miles 4 km east of Abergwynfi, Mid Glamorgan. An estate track exists to the summit of Ben a'Bhuird (3860 ft 1176 m) in Grampian, Scotland. The highest motorway in Great Britain is the trans-Pennine M62, which, at the Windy Hill interchange, reaches an altitude of 1220 ft 371 m. Its Dean Head cutting is the deepest roadway cutting in Europe at 183 ft 55,7 m.

Lowest

The lowest road in the world is that along the Israeli shores of the Dead Sea, 1290 ft 393 m below sea-level. The lowest surface roads in Great Britain are just below sea-level in the Holme Fen area of Cambridgeshire. The world's lowest 'pass' is Rock Reef Pass, Everglades National Park, Florida which is 3 ft 91 cm above sea-level.

Longest viaduct

The longest elevated road viaduct on the British road system is the 2.97 mile 4779 m Gravelly Hill to Castle Bromwich section of the M6. It was completed in May 1972.

Largest square

The Tian an men (Gate of Heavenly Peace) Square in Peking, described as the navel of China, extends over 98 acres 39.6 ha. The Maiden e Shah in Isfahan, Iran extends over 20.1 acres 8.1 ha. The oldest London Square is Lincoln's Inn Fields dating to the mid 17th century. The largest is the 6.99 acre 2.82 ha Lad-broke Square (open to residents only) constructed in 1842-45 while Lincoln's Inn Fields measures 6.84 acres 2.76 ha.

Traffic lights

Semaphore-type traffic signals had been set up in Parliament Square, London in 1868 with red and green gas lamps for night use. It was not an offence to disobey traffic signals until assent was given to the 1930 Road Traffic Bill. Traffic lights were introduced in Great Britain with a one-day trial in Wolverhampton on 11 Feb 1928. They were first permanently operated in Leeds, West Yorkshire on 16 Mar and in Edinburgh, Scotland on 19 Mar 1928. The first vehicle-actuated lights were installed by Plessey at the Cornhill-Gracechurch Junction, City of London in April 1932.

Parking meters

The earliest parking meters ever installed were those put in the business district of Oklahoma City, Oklahoma, USA, on 19 July 1935. They were the invention of Carl C. Magee (USA) and reached London in 1958.

Most driver

It was reported that a 75-year-old male driver received 10 traffic tickets, drove on the wrong side of the road four times, committed four hit-and-run offences and caused six accidents, all within 20 minutes, in McKinney, Texas, USA, on 15 Oct 1966. The most heavily banned driver in Britain was John Hogg, 28, who, in the High Court, Edinburgh on 27 Nov. 1975, received 5 3/4 years in gaol and his 3rd, 4th and 5th life bans for drunken driving in a stolen car while disqualified. For his previous 40 offences he had received bans of 7 1/2 years plus two life bans.

Milestone

Britain's oldest milestone *in situ* is a Roman stone dating from AD 150 on the Stanegate, at Chesterholme, near Bardon Mill, Northumberland.

Longest ford

The longest ford in any classified road in England is that at Bilbrook, Old Cleeve parish, Somerset which measures 90 yd 82 m in width.

Inland waterways

The country with the greatest length of inland waterways is Finland. The total length of navigable lakes and rivers is about 50,000 km 31,000 miles. In the United Kingdom the total length of navigable rivers and canals is 3940 miles 6340 km.

Longest navigable river

The longest navigable natural waterway in the world is the River Amazon, which sea-going vessels can ascend as far as Iquitos, in Peru, 2236 miles 3598 km from the Atlantic seaboard. On a National Geographic Society expedition ending on 10 Mar 1969, Helen and Frank Schreider navigated downstream from San Francisco, Peru, a distance of 3845 miles 6187 km to Bélem.

TELECOMMUNICATIONS**Telephones**

There were 472,136,789 telephones in the world at 1 Jan 1980 as estimated by The American Telephone & Telegraph Co. The country with the greatest number was the United States, with 375,505,000 instruments, equivalent to 791 for every 1000 people or in 97.5 of every 100 households. This compares with the United Kingdom figure of 26,651,384 (31 Mar 1980) (third largest in the world to the USA and Japan), or 477 per 1000 people. The territory with fewest reported telephones is Pitcairn Island with 28 for a population of 63. The country with the lowest proportion is Zaire with less than 1 telephone per 1000.

The greatest total of calls made in any country is in the United States, with 245,216 million (1111 calls per person) in 1979. The United Kingdom telephone service connected 19,964,500,000 calls, at an average of 358 per person.

The city with most telephones is New York City, NY, USA, with 5,785,384 (820 per 1000 people) at 1 Jan 1980. In 1980 Washington DC reached the level of 1648 telephones per 1000 people.

Telephones Longest telephone cable

The world's longest submarine telephone cable is the Commonwealth Pacific Cable (COMPAC), which runs for more than 9000 miles 14 480 km from Australia, via Auckland, New Zealand and the Hawaiian Islands to Port Alberni, Canada. It cost about £35,000,000 and was inaugurated on 2 Dec 1963.

Oldest Telephone Number

W. Brooks & Son of Covent Garden, London were listed in the United Telephone Co directory as 3621. Their number today is 01 836 3621.

Telephone Directories

The world's most difficult directory to tear in half is that for Houston, Texas which runs to 2889 pages for 939,640 listings. The easiest would be that for Farley, Missouri—282 listings on 3 pages.

Switchboard largest

The world's biggest switchboard is that in the Pentagon, Washington DC with 25,000 lines and an annual phone bill of \$8.7 million.

Postal services

The country with the largest mail in the world is the United States, whose population posted 110.1 billion letters and packages in 1981 when the US Postal Service employed 670,239 people with the world's largest vehicle fleet of 190,000 cars and trucks. The United Kingdom total was 9969 million letters and 180 million parcels in the year ending 31 Mar 1981. The Direct Mail Marketing Association alleged that 7.5% of US third class mail or 2000 million pieces were 'lost' in 1981.

The United States also takes first place in the average number of letters which each person posts during one year. The figure was 480 in 1980. The United Kingdom figure was 177 per head in 1980-81.

Postal address Highest numbering

The practice of numbering houses began in 1463 on the Pont Notre Dame, Paris, France. The highest numbered house in Britain is No 2679 Stratford Road, Hockley Heath, West Midlands, owned since 1964 by Mr and Mrs Howard Hughes. The highest numbered house in Scotland is No 2629 London Road, Mount Vernon, Glasgow, which is part of the local police station.

Pillar-boxes Oldest

The oldest pillar-box still in service is one dating from 8 Feb 1853 in Union Street, St Peter Port, Guernsey. It was cast by John Vaudin in Jersey and was restored to its original maroon livery in October 1981. The oldest original box in Great Britain is at Barnes Cross, Holwell (postally in Bishop's Caudle), Dorset, dating from probably later in 1853. The hexagonal roof pillar box in Kent Railway Station, Glanmere, Cork dates from 1857.

Post Offices

The Post Office's northernmost post office is at Haroldswick, Unst, Shetland Islands. The most southerly in the British Isles is at Samarès, Jersey. The oldest is at Sanquhar, Dumfries and Galloway which was first referred to in 1763. In England the Post Office at Shipton-Under-Wychwood, Oxfordshire dates back to April 1845.

The longest counter in Britain is one of 185 ft 56.38 m with 33 positions opened in 1962 at Trafalgar Square, London. The biggest sorting office is that of 17 1/2 acres 6.75 ha in Birmingham with a capacity of 3,500,000 items per day.

7. EDUCATION

Illiteracy

Literacy is variously defined as 'ability to read simple subjects' and 'ability to read and write a simple letter'. The looseness of definition and the scarcity of data for many countries preclude anything more than approximations, but the extent of illiteracy among adults (15 years old and over) is estimated to have been

POSTAGE STAMPS

EARLIEST	Put on sale at GPO 1 May 1840	1d Black of Great Britain, Queen Victoria, 68,158,080 printed. Available for pre-payment of postage on 6 May 1840.
HIGHEST PRICE (TENDER) (WORLD)	\$1 million (then £495,000)	5 cent Blue Alexandria USA cover, Nov 25 1846 by George Normann via David Feldmans of Geneva on 9 May 1981.
HIGHEST PRICE (AUCTION) (WORLD)	\$850,000 (£380,000) \$935,000 (with buyer's premium)	British Guiana 1c magenta provisional post-marked 'Ap. 4 1856' by Irwin R. Weinberg syndicate to anonymous collector at Waldorf-Astoria, New York City on 5 Apr 1980.
HIGHEST PRICE (ERROR)	\$500,000 (£227,500)	US 1918 24 cent airmail invert of Jenny biplane 'Princeton' block of 4, by Myron Kaller syndicate on 19 July 1979. A single example reached \$180,000 at auction in New York City in May 1982.
HIGHEST PRICE (AUCTION) (UK)	£50,000 £50,000	1d 'Perot' of Bermuda, 1854, at Stanley Gibbons, London on 4 Oct 1973. 1d orange-red of Mauritius, 1847, by M. René Berlingen at Stanley Gibbons, London on 25 Nov 1976.
HIGHEST PRICE (PHILATELIC ITEM) (UK)	£75,000	Pair of 2 cent 'Cotton Reels' of British Guiana (now Guyana) on envelope dated 25 Nov 1851 sold by F. T. Small, by Robson Lowe at Christie's, London on 21 Mar 1970.
LARGEST PHILATELIC PURCHASE	\$11,000,000 (then £4,945,000)	Marc Haas collection of 3000 US postal and pre-postal covers to 1869 by Stanley Gibbons International Ltd of London in August 1979.
LARGEST (SPECIAL PURPOSE) (STANDARD POSTAGE)	9¾ × 2¾ in 247.5 × 69.8 mm 6.3 × 4.33 in 160 × 110 mm	Express Delivery of China, 1913. Marshall Islands 75 cents issued 30 Oct 1979.
SMALLEST	0.31 × 0.37 in 8 × 9.5 mm	10 cent and 1 peso Colombian State of Bolivar, 1863-6.
HIGHEST DENOMINATION (WORLD) (UK)	£100 £5	Red and black, George V, of Kenya, 1925-7. Orange, Victoria, issued 21 Mar 1882. Pink and Blue Elizabeth II definitive 2 Feb 1977.
LOWEST DENOMINATION	3,000 pengő of Hungary	Issued 1946 when 150 million million pengő = 1p.
RAREST (WORLD)	Unique examples include	British Guiana (now Guyana) 1 cent black on magenta of 1856 (see above); Swedish 3 skilling banco yellow colour error of 1855. Gold Coast provisional of 1885 and US post-master stamps from Boscowen, New Haven and Lockport, NY.
RAREST (UK) (Issued for postal use)	11 or 12	6d dull purple Inland Revenue Edward VII, issued and withdrawn on 14 May 1904. Only unused specimen in private hands from W. H. Harrison. Crips sold by Stanley Gibbons for £10,000 on 27 Oct 1972.

34.7 per cent in 1969. The continent with the greatest proportion of illiterates is Africa, where 81.5 per cent of adults are illiterate. The last published figure for Mali in 1960 showed 97.8 per cent of people over 15 were unable to read.

University Oldest World

Probably the oldest educational institution in the world is the University of Karueein, founded in AD 859 in Fez, Morocco. The University of Bologna was founded in 1088.

University Oldest Great Britain

The oldest university in the United Kingdom is the University of Oxford, which came into being in c. 1167. The oldest of the existing colleges is probably University College (1249), though its foundation is less well documented than that of Merton College in 1264. The earliest college at Cambridge University is Peterhouse, founded in 1284. The largest college at either university is Trinity College, Cambridge. It was founded in 1546. The oldest university in Scotland is the University of St. Andrews, Fife. It was established in 1411.

University Greatest enrolment

The university with the greatest enrolment in the world is the State University of New York, USA, with 348,360 students enrolled in 1981. Its oldest college at Albany, New York was founded in 1844. Britain's largest university is the University of London with 40,893 internal students and 18,953 external students (in 1981-82) so totalling 59,846. The Open University, first called the University of the Air (Royal Charter 30 May 1969) at Walton Hall near Milton Keynes has 5520 part-time tutors and 75,000 students.

University Largest

Tenders for the \$3.4 billion (£1790 million) University of Riyadh, Saudi Arabia closed in June 1978. The University will house 15,000 families and have its own mass transport system.

The largest existing university building in the world is the M. V. Lomonosov State University on the Lenin Hills, south of Moscow, USSR. It stands 240 m 787.4 ft tall, has 32 storeys and contains 40,000 rooms. It was constructed in 1949-53.

University Most northerly

The world's most northerly university is Inupiat University of the Arctic Barrow, Alaska, USA in Lat 71° 16' N. Eskimo subjects feature in the curricula.

Largest court or quadrangle

The largest College quadrangle at any Oxford or Cambridge college is the Great Court, Trinity College, Cambridge completed in 1605. Its dimensions average 325 ft × 273 ft 99.06 m × 83.2 m.

Professor Youngest

The youngest at which anybody has been elected to a chair in a university is 19 years in the case of Colin MacLaurin (1698-1746), who was admitted to Marischal College, Aberdeen as Professor of Mathematics on 30 Sept 1717. In 1725 he was made Professor of Mathematics at Edinburgh University on the recommendation of Sir Isaac Newton. Dr Harvey Martin Friedman, PhD, (b. 23 Sept 1948) was appointed Assistant Professor of Logic at Stanford University, California, USA on 1 Sept 1967—3 weeks before his 19th birthday.

Professors Most durable

The longest period of which any professorship has been held is 63 years in the case of Thomas Martyn (1735-1825), Professor of Botany at Cambridge University from 1762 until his death. His father, John Martyn (1699-1768), had occupied the chair from 1733 to 1762. Dr Joel Hildebrand (b. 16 Nov 1881), Professor Emeritus of Physical Chemistry at the University of California, Berkeley, became first an Assistant Professor in 1913 and in 1981 published his 275th research paper.

Senior Wranglers

Since 1910 the Wranglers (first class honours students in the Cambridge University mathematical Tripos, part 2) have been placed in alphabetical order only. In 1890 Miss P. G. Fawcett of Newnham was placed 'above the Senior Wrangler'.

Youngest undergraduate and graduate

The most extreme recorded case of undergraduate juvenility was that of William Thomson (1824-1907), later Lord Kelvin, OM.

THE HUMAN WORLD

GCVO, who entered Glasgow University aged 10 years 4 months in October 1834 and matriculated on 14 Nov 1834. Dr Merrill Kenneth Wolf (b. 28 Aug 1931) of Cleveland, Ohio took his B.A. in music from Yale University in September 1945 in the month of his 14th birthday.

Schools Oldest in Britain

The title of the oldest existing school in Britain is contested. It is claimed that King's School in Canterbury, Kent, was a foundation of Saint Augustine, some time between his arrival in Kent in AD 597 and his death in c. 604. Cor Tewdws (College of Theodosius) at Llantwit Major, South Glamorgan, reputedly burnt down in AD 446, was refounded, after an elapse of 62 years, by St Illtyd in 508 and flourished into the 13th century. The Pedagogue's House, King Edward VI School, Stratford-upon-Avon, Warwickshire was built in 1427.

School Largest World

At the time of its highest enrolments the largest school in the world was the De Witt Clinton High School in the Bronx, New York City, NY, USA, with a peak of 12,000 in 1934. It was founded in 1897 and now has an enrolment of 4500.

Great Britain

The school with the most pupils in Great Britain was Exmouth Comprehensive, Devon with 2582 (1979-80). The highest enrolment in Scotland has been at Our Lady's Roman Catholic High School, Motherwell, Strathclyde with a peak of 2325 in August 1977. The total in Holy Child School, Belfast, Northern Ireland reached 2752 in 1973 before being split up. Britain's most cosmopolitan school is reputed to be Hallfield Infant's School Queensway, London with 51 nationalities in 1979.

School Most Expensive World

L'Institut 'Le Rosey' at Rolle, Switzerland charges annual fees of at least 25,000 Sw Fr or £5820.

The most expensive US college in 1981 was Bennington College, Vermont at \$12,140 (£6745) for tuition, room and board—\$20 p.a. more than Harvard.

Great Britain

The most expensive school in Great Britain is Millfield (founded 1935) in Street, Somerset (headmaster C. R. M. Atkinson). The annual fee for boarding entries in 1982-3 is £5715. The most expensive girls' school in 1982 was Cobham Hall, Kent (founded 1962) with annual fees of £3678.

Oldest old school tie

The practice of wearing distinctive neckties bearing the colours of registered designs of schools, universities, sports clubs, regiments, etc., appears to date from c. 1880. The practice originated in Oxford University, where boater bands were converted into use as 'ribbon ties'. The earliest definitive evidence stems from an order from Exeter College for college ties, dated 25 June 1880.

PTA Oldest

The Parent-Teacher Association with the earliest foundation date in Britain is St. Christopher School, Letchworth, Parents' Circle formed in 1919.

Most schools

The greatest documented number of schools attended by a pupil is 265 by Wilma Williams, now Mrs R. J. Horton, from 1933-43 when her parents were in show business in the USA.

Most 'O' and 'A' levels

Francis L. Thomason of Tottenham, London had by January 1977 accumulated 37 O, 8 A and 1 S levels making a total of 46. A. F. Prime, a prisoner in HM Prison Sudbury, has a total of 10 A's and 37 O's to January 1981. Environmental difficulties make study harder in prison than elsewhere.

Stephen Marrell of Crown Woods School, Eltham passed 8 A levels at one sitting in June 1978 achieving 7 at grade A. Robert Padgett (b. 7 Feb 1959) of St Peter's School, Bournemouth, secured 13 O level passes at grade A at one sitting in the summer of 1975. Subsequently he passed 3 A levels at grade A and 2 S

Education/Religion

levels with firsts. Andrew Maclaren of Chelmsford, Essex passed 14 O levels, 5 A levels all at grade A and 3 S levels at grade one—making 22 top grades.

Youngest headmaster

The youngest headmaster of a major public school was Henry Montagu Butler (b. 2 July 1833), appointed Headmaster of Harrow School on 16 Nov 1859, when aged 26 years 137 days. His first term in office began in January 1860.

Most durable teachers

David Rhys Davies (1835-1928) taught as a pupil teacher and latterly as teacher and headmaster of Dame Anna Child School, Whitton, Powys (1879-1928) for a total of 76 years 11 months. Col Ernest Achey Loftus CBE, TD, DL (b. 11 Jan 1884) served as a teacher over a span of 73 years from May 1901 in York, England until 18 Feb 1975 in Zambia retiring as the world's oldest civil servant aged 91 years 38 days. His father William was born in Hull in the reign of William IV in 1832.

Elsie Marguerite Touzel (b. 1889) of Jersey began her teaching career aged 16 in 1905 and was teaching at Les Alpes School, Farnham until her retirement on 30 Sept 1980.

Most durable don

Dr Martin Joseph Routh (b. Sept 1755) was President of Magdalen College, Oxford, from April 1791 for 63 years 8 months until his death in his 100th year on 22 Dec 1854. He had previously been a fellow for 16 years and was thus a don for a span of 79 years.

Highest Endowment

The greatest single gift in the history of higher education has been the transfer by Robert W. Woodruff of the entire Emory and Ernest Woodruff Trust funds of \$105 million (£58½ million) to Emory University (founded 1836) Atlanta, Georgia, USA in Nov 1979.

8. RELIGIONS

Oldest

The oldest major formal religion is Hinduism. Its Vedic precursor was brought to India by Aryans c. 1500 BC. The Rig Veda Hindu hymnal was codified c. 900 BC or earlier. The Judaic way of life formulated as early as 2000 BC.

Largest

Religious statistics are necessarily only approximate. The test of adherence to a religion varies widely in rigour, while many individuals, particularly in the East, belong to two or more religions.

Christianity is the world's prevailing religion, with some 1,050,000,000 adherents in 1981. The Vatican statistics office reported that in 1981 there were 749,430,000 Roman Catholics. The largest non-Christian religion is Islam (Muslim) with some 590,000,000 followers.

In the United Kingdom the Anglicans comprise members of the Established Church of England, the Dis-established Church in Wales, the Episcopal Church in Scotland and the Church of Ireland. The Church of England has two provinces (Canterbury and York), 44 dioceses, 10,992 full time diocesan clergymen and 13,600 parishes (1981).

In Scotland the most numerous group is the Church of Scotland (12 Synods, 46 Presbyteries), which had 953,333 members as at 1 Jan 1981.

Largest clergies

The world's largest religious organization is the Roman Catholic Church, with 123 Cardinals, 411 archbishops, 2395 bishops, 416,329 priests and 937,600 nuns. There are about 420,000 churches.

Jews

The total of world Jewry was estimated to be 14.3 million in 1980. The highest concentration is in the United States, with 5.8

million, of whom 2.0 million are in the New York area. The total in Israel is 3,076,000. The total of British Jewry is 410,000 of whom 280,000 are in Greater London, and 13,000 in Glasgow. The total in Tōkyō, Japan, is only 400.

PLACES OF WORSHIP

Earliest World

The earliest known shrine dates from the proto-neolithic Natufian culture in Jericho, where a site on virgin soil has been dated to the ninth millennium BC. A simple rectilinear red-plastered room with a niche housing a stone pillar believed to be the shrine of a Pre-Pottery fertility cult dating from c. 6500 BC was also uncovered in Jericho (now Arihā) in Jordan. The oldest surviving Christian church in the world is Qal'at es Salihiye in eastern Syria, dating from AD 232.

Oldest Great Britain

The oldest ecclesiastical building in the United Kingdom is a 6th century cell built by St Brendan in AD 542 on Eileachan Naoimh (pronounced Noo), Garvelloch Islands, Strathclyde. The Church in Great Britain with the oldest origins is St Martin's Church in Canterbury, Kent. It was built in AD 560 on the foundations of a 1st century Roman church. The oldest church in Ireland is the Gallerus Oratory, built in c. 750 at Ballyferriher, near Kilmalkedar, County Kerry. Britain's oldest nunnery is St Peter and Paul Minster, on the Isle of Thanet, Kent. It was founded in c. 748 by the Abbess Eadburga of Bugga. The oldest wooden church in Great Britain is St Andrew's, Greensted, near Ongar, Essex dating to AD 845 though some of the timbers date to the original building of c. AD 650.

Temple Largest

The largest religious structure ever built is Angkor Wat (City Temple), enclosing 402 acres 162.6 ha in Kampuchea, south-east Asia. It was built to the God Vishnu by the Khmer King Suryavarman II in the period 1113–50. Its curtain wall measures 1400 × 1400 yd 1280 × 1280 m and its population, before it was abandoned in 1432, was 80,000. The whole complex of 72 major monuments begun c. AD 900 extends over 15 × 5 miles 24 × 8 km. The largest Buddhist temple in the world is Borobudur, near Jogjakarta, Indonesia built in the 8th century. It is 103 ft 31.5 m tall and 403 ft 123 m square.

The largest Mormon temple is in Kensington, Maryland, USA dedicated in November 1974 with a floor area of 159,000 ft² 14 770 m².

Cathedral Largest World

The world's largest cathedral is the cathedral church of the Diocese of New York, St John the Divine, with a floor area of 121,000 ft² 11 240 m² and a volume of 16,822,000 ft³ 476 350 m³. The cornerstone was laid on 27 Dec 1892, and work on the Gothic building was stopped in 1941. Work re-started in earnest in July 1979. In New York it is referred to as 'Saint John the Unfinished'. The nave is the longest in the world, 601 ft 183.18 m in length, with a vaulting 124 ft 37.79 m in height.

The cathedral covering the largest area is that of Santa Mariá de la Sede in Sevilla (Seville), Spain. It was built in Spanish Gothic style between 1402 and 1519 and is 414 ft 126.18 m long, 271 ft 82.60 m wide and 100 ft 30.48 m high to the vault of the nave.

Cathedral Largest Great Britain

The largest cathedral in the British Isles is the Anglican Cathedral Church of St James on the Mount, Liverpool. Built in modernized Gothic style, work was begun on 18 July 1904, and was completed in October 1978 after 74 years (cf. Exeter 95 years) using ½ million stone blocks and 12 million bricks at a cost of £65 million (1978 prices). The building encloses 100,000 ft² 9300 m² and has an overall length of 671 ft 204.52 m. The Vestey Tower is 331 ft 100.88 m high.

Cathedral Smallest

The smallest cathedral in the world is the Cathedral Chapel of St Francis of the American Catholic Church built in 1933 at Laguna Beach, California with an area of 1008 ft² 93.6 m² and seating for 42 people. The smallest cathedral in use in the United Kingdom (of old foundation) is St Asaph in Clwyd, Wales, it is

182 ft 55.47 m long, 68 ft 20.72 m wide and has a tower 100 ft 30.48 m high. Oxford Cathedral in Christ Church (College) is 155 ft 47.24 m long. The nave of the Cathedral of the Isles on the Isle of Cumbrae, Strathclyde measures only 40 × 20 ft 12.19 × 6.09 m. The total floor area is 2,124 ft² 197.3 m².

Church Largest World

The largest church in the world is the basilica of St Peter, built between 1492 and 1612 in the Vatican City, Rome. The length of the church, measured from the apse, is 611 ft 4 in 186.33 m. The area is 162,990 ft² 15 142 m². The inner diameter of the famous dome is 137 ft 9 in 41.98 m and its centre is 119 m 390 ft 5 in high. The external height is 457 ft 9 in 139.52 m.

The elliptical Basilique of St Pie X at Lourdes, France, completed in 1957 at a cost of £2,000,000 has a capacity of 20,000 under its giant span arches and a length of 200 m 656 ft.

The crypt of the underground Civil War Memorial Church in the Guadarrama Mountains, 45 km 28 miles from Madrid, Spain, is 260 m 853 ft in length. It took 21 years (1937–58) to build, at a reported cost of £140,000,000, and is surmounted by a cross 150 m 492 ft tall.

Church Largest Great Britain

The largest Church in the United Kingdom is the Collegiate Church of St Peter at Westminster built AD 1050–1745. Its maximum dimensions are overall: length 530 ft 161.5 m; breadth across transept 203 ft 61.87 m and internal height 101 ft 8 in 30.98 m. The largest parish church is the Parish Church of the Most Holy and Undivided Trinity at Kingston-upon-Hull covering 27,235 ft² 2530 m² and with an external length and width of 288 ft × 124 ft 87.7 × 37.7 m. It is also believed to be the country's oldest brick building serving its original purpose, dating from c. 1285. Both the former Cathedral of St Mungo, Glasgow and Beverley Minster, Humberside are now used as parish churches. The largest school chapel is that of the 150 ft 45.7 m high Lancing College, West Sussex.

Church Smallest World

The world's smallest church is the Union Church at Wiscasset, Maine, USA, with a floor area of 31½ ft² 2.92 m² (7 × 4½ ft 2.13 × 1.37 m). St. Gobban's Church, Portbradden, County Antrim, Northern Ireland measures 12 ft 1½ in by 6 ft 6 in 3.7 × 2.0 m.

Church Smallest Great Britain

The smallest church in use in England is Bremilham Church, Cowage Farm, Foxley near Malmesbury, Wiltshire which measures 12 × 12 ft 3.65 × 3.65 m and is used for service once a year. The smallest completed medieval English church in regular use is that at Culbone, Somerset, which measures 35 × 12 ft 10.66 × 3.65 m. The smallest Welsh chapel is St Trillo's Chapel, Rhôs-on-Sea (Llandrillo-yn-Rhos), Clwyd, measuring only 12 × 6 ft 3.65 × 1.83 m. The smallest chapel in Scotland

Culbone Church, near Porlock in Somerset, which measures 35 ft × 12 ft 10.66 m × 3.65 m. (Walter Parker)



is St Margaret's, Edinburgh, measuring $16\frac{1}{2} \times 10\frac{1}{2}$ ft 5.02×3.20 m, giving a floor area of $173\frac{1}{4}$ ft² 16.09 m².

Synagogue Largest World

The largest synagogue in the world is the Temple Emanu-El on Fifth Avenue at 65th Street, New York City, NY, USA. The temple, completed in September 1929, has a frontage of 150 ft 45.72 m on Fifth Avenue and 253 ft 77.11 m on 65th Street. The Sanctuary proper can accommodate 2500 people, and the adjoining Beth-El Chapel seats 350. When all the facilities are in use, more than 6000 people can be accommodated.

Synagogue Largest Great Britain

The largest synagogue in Great Britain is the Edgware Synagogue, Barnet, Greater London, completed in 1959, with a capacity of 1630 seats. That with highest registered membership is Ilford Synagogue with 2560 at 1 Jan 1982.

Mosque Largest

The largest mosque ever built was the now ruinous al-Malawiya mosque of al-Mutawakil in Samarra, Iraq built in AD 842–52 and measuring 9.21 acres 3.72 ha with dimensions of 784×512 ft 238.9×156.0 m. The world's largest mosque in use is the Umayyad Mosque in Damascus, Syria built on a 2000-year-old religious site measuring 157×97 m 515×318 ft thus covering an area of 3.76 acres 1.52 ha. The largest mosque will be the Merdeka Mosque in Djakarta, Indonesia, which was begun in 1962. The cupola will be 45 m 147.6 ft in diameter and the capacity in excess of 50,000 people.

Minaret Tallest

The tallest minaret is one of 282 ft 86 m at the Sultan Hassan Mosque (founded 1356 AD) in Cairo, Egypt. The world's tallest free-standing stone tower is the Qutb Minar, south of New Delhi, India, built in 1194 to a height of 238 ft 72.54 m.

Pagoda Tallest and Oldest

The world's tallest pagoda is the Phra Pathom Chedi at Nakhon Pathom, Thailand, which was built for King Mongkut in 1853–70. It rises to 115 m 377 ft. The oldest pagoda in China is Sung-Yo Ssu in Honan built with 15 12-sided storeys, in AD 523.

Sacred Object Most Valuable

The sacred object with the highest intrinsic value is the 15th century gold Buddah in Wat Trimitr Temple in Bangkok, Thailand. It is 10 ft 3.04 m tall and weighs an estimated $5\frac{1}{2}$ tonnes. At \$500 per fine ounce its intrinsic worth has been calculated to be £28½ million. The gold under the plaster exterior was only found in 1954.

Nave Longest

The longest nave in the United Kingdom is that of St Albans Cathedral, Hertfordshire, which is 285 ft 86.86 m long. The central tower of Liverpool's Anglican Cathedral (internal overall length 619 ft 188.6 m) interrupts the nave with an undertower space.

Spire Tallest World

The tallest cathedral spire in the world is that of the Protestant Cathedral of Ulm in Germany. The building is early Gothic and was begun in 1377. The tower, in the centre of the west façade, was not finally completed until 1890 and is 160.90 m 528 ft high. The world's tallest church spire is that of the Chicago Temple of the First Methodist Church on Clark Street, Chicago, Illinois, USA. The building consists of a 22-storey skyscraper (erected in 1924) surmounted by a parsonage at 330 ft 100.5 m, a 'Sky Chapel' at 400 ft 121.92 m and a steeple cross at 568 ft 173.12 m above street level.

Great Britain

The highest spire in Great Britain is that of the church of St Mary, called Salisbury Cathedral, Wiltshire. The Lady Chapel was built in the years 1220–5 and the main fabric of the cathedral was finished and consecrated in 1258. The spire was added later, *c.* 1305, and reaches a height of 404 ft 123.13 m. The central spire of Lincoln Cathedral completed in *c.* 1307 and which fell in 1548 was 525 ft 160.02 m tall.

Stained glass Oldest

The oldest stained glass in the world represents the Prophets in a

window of the cathedral of Augsburg, Bavaria, Germany, dating from *c.* 1050. The oldest datable stained glass in the United Kingdom is represented by 12th century fragments in the Tree of Jesse in the north aisle of the nave of York Minster, dated *c.* 1150, and medallions in Rivenhall Church, Essex which appear to date from the first half of that century. Dates late in the previous century have been attributed to glass in a window of the church at Compton, Surrey, and a complete window in St Mary the Virgin, Brabourne, Kent.

Stained glass Largest

The largest stained glass window is the complete mural of The Resurrection Mausoleum in Justice, Illinois, measuring 22,381 ft² 2079 m² in 2448 panels completed in 1971. The largest single stained glass window in Great Britain is the East window in Gloucester Cathedral measuring 72×38 ft 21.94×11.58 m, set up to commemorate the Battle of Crécy (1346), while the largest area of stained glass is 125 windows, totalling 25,000 ft² 2322 m² in York Minster.

Brasses

The world's oldest monumental brass is that commemorating Bishop Yso von Wölpe in Andreaskirche, Verden, near Hanover, W. Germany, dating from 1231. An engraved coffin plate of St Ulrich (d. 973), laid in 1187, was found buried in the Church of SS Ulrich and Afra, Augsburg, W. Germany in 1979. The oldest brass in Great Britain is of Sir John D'Abernon (d. 1277) at Stoke D'Abernon, near Leatherhead, Surrey, dating from *c.* 1320.

A dedication brass dated 24 Apr 1241 in Ashbourne church, Derbyshire has been cited as the earliest arabic writing extant in Britain.

CHURCH PERSONNEL

Saints

There are 128 'registered' saints (including 60 St Johns) of whom 628 are Italians, 576 French and 271 from the British Isles. Of these 8 came from Cambridge and 7 from Oxford between 1535 and 1645 but none from the House of Commons. Britain's first Christian martyr was St Alban executed *c.* AD 209. The first US born saint is Mother Elizabeth Ann Bayley Seton (1774–1821) canonized 14 Sept 1975. The total includes 76 Popes.

Most and least rapidly canonized

The shortest interval that has elapsed between the death of a Saint and his canonization was in the case of St Anthony of Padua, Italy, who died on 13 June 1231 and was canonized 352 days later on 30 May 1232. The other extreme is represented by Pope St Leo III who died on 12 June 816 and was made a Saint in 1673—857 years later.

Pope Reign Longest and Shortest

The longest reign of any of the 264 Popes has been that of Pius IX (Giovanni Maria Mastai-Ferretti), who reigned for 31 years 236 days from 16 June 1846 until his death aged 85, on 7 Feb 1878. Pope Stephen II was elected on 24 Mar 752 and died two days later.

Pope Oldest

It is recorded that Pope St Agatho (reigned 678–81) was elected at the age of 103 and lived to 106, but recent scholars have expressed doubts. The oldest of recent Pontiffs has been Pope Leo XIII (Giacchino Pecci), who was born on 2 Mar 1810, elected Pope at the third ballot on 20 Feb 1878 and died on 20 July 1903, aged 93 years 140 days.

Pope Youngest

The youngest of all Popes was Pope Benedict IX (d. 1056) (Theophylact), who had three terms as Pope; 1032–44; April to May 1045; and 8 Nov 1047 to 17 July 1048. It would appear that he was aged only 11 or 12 in 1032, though the Catalogue of the Popes admits only to his 'extreme youth'.

Last non-Italian, ex-Cardinalate and English Popes

The current Pope John-Paul II, elected on 16 Oct 1978, (born Karol Wojtyla, 18 May 1920 at Wadowice, nr. Cracow, Poland) is the first non-Italian pope since Cardinal Adrian Florenz Boeyens (Pope Adrian VI) of the Netherlands crowned on 31 Aug

Religions

1522. The last Pope elected from outside the College of Cardinals was Bartolomeo Prignano (1318–89), Archbishop of Bari, who was elected Pope Urban VI on 8 Apr 1378. The only Englishman to be elected Pope was Nicholas Breakspear (born at Abbots Langley, near Watford, Hertfordshire, in c. 1100), who, as Cardinal Bishop of Albano, was elected Pope Adrian IV on 4 Dec 1154, and died on 1 Sept 1159.

Last married Pope

The first 37 Popes had no specific obligation to celibacy. Pope Hormisdas (514–23) was the father of Pope Silverius (536–7). The last married Pope was Adrian II (867–72). Rodrigo Borgia (1431–1503) was the father of at least six children before being elected Pope Alexander VI in 1492.

Slowest papal election

After 31 months without declaring *Habemus Papam* ('We have a Pope'), the cardinals were subjected to a bread and water diet and the removal of the roof of their conclave by the Mayor of Viterbo before electing Tabaldo Visconti (c. 1210–76), the Archbishop of Liège, as Pope Gregory X on 1 Sept 1271. The papacy was, however, vacant for at least 3 years 214 days in AD 304–8. The shortest conclave was that of 21 Oct 1503 for the election of Pope Julius II on a first ballot.

Cardinal Oldest

By 2 Feb 1973 the Sacred College of Cardinals contained a record 145 declared members compared with 123 on 21 Mar 1982. The oldest is Carlos Carmelo de Vasconcellos Motta (b. 16 July 1890). The record length of service of any cardinal has been 60 years 10 days by the Cardinal Duke of York, a grandson of James VII of Scotland and II of England, from 3 July 1747 to 13 July 1807.

The oldest Cardinal of all time was reputedly Giorgio da Costa (b. Portugal, 1406), who died in Rome on 18 Sept 1508 aged 102.

Cardinal Youngest

The youngest Cardinal of all time was Luis Antonio de Bourbon (b. 25 July 1727) created on 19 Dec 1735 aged 8 years 147 days. His son Luis was also made a Cardinal but aged 23. The youngest Cardinal is Jaime L. Sin, Archbishop of Manila (b. 31 Aug 1928).

Bishopric Longest tenure

The longest tenure of any Church of England bishopric is 57 years in the case of the Rt Rev. Thomas Wilson, who was consecrated Bishop of Sodor and Man on 16 Jan 1698 and died in office on 7 Mar 1755. Of English bishoprics the longest tenures, if one excludes the unsubstantiated case of Aethelwulf, reputedly Bishop of Hereford from 937 to 1012, are those of 47 years by Jocelin de Bohun (Salisbury) 1142–89 and Nathaniel Crew or Crewe (Durham) 1674–1721.

Bishop Oldest

The oldest serving bishop (excluding Suffragans and Assistants) in the Church of England at 8 June 1982 was the Right Reverend Douglas Feaver, Bishop of Peterborough, who was born on 22 May 1914.

The oldest Roman Catholic bishop in recent years has been Bishop Angelo Teutonico, formerly Bishop of Aversa (b. 28 Aug 1874), who died aged 103 years 276 days on 31 May 1978. He had celebrated Mass about 24,800 times. Bishop Herbert Welch of the United Methodist Church, who was elected a bishop for Japan and Korea in 1916, died on 4 Apr 1969 aged 106.

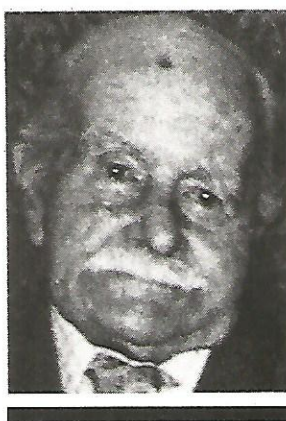
Bishop Youngest

The youngest bishop of all time was HRH The Duke of York and Albany, KG, GCB, GCH, the second son of George III, who was elected Bishop of Osnabrück, through his father's influence as Elector of Hanover, at the age of 196 days on 27 Feb 1764. He resigned after 39 years' enjoyment.

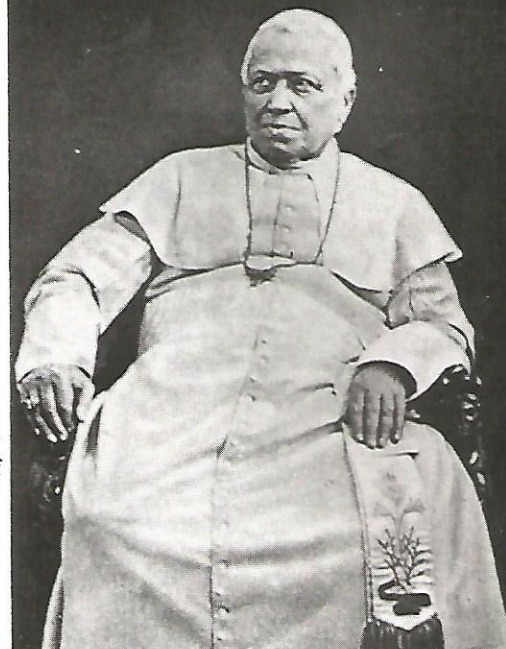
The youngest serving bishop (excluding Suffragans and Assistants) in the Church of England at 8 June 1982 was the Rt Rev David Young (b. 2 Sept 1931), Bishop of Ripon.

Longest incumbency

The longest Church of England incumbency on record is one of



above: Leonard Thompson of Kidderminster, Hereford & Worcester, who sang with St Mary's Church Choir for 88 years. (Courtesy: The Kidderminster Shuttle)
right: Pope Pius IX who had the longest ever papal reign, 31 years 236 days (see p. 236).



75 years 357 days by the Rev. Bartholomew Edwards, Rector of St Nicholas, Ashill, Norfolk from 1813 to 1889. There appears to be some doubt as to whether the Rev. Richard Sherinton was installed at Folkestone from 1524 or 1529 to 1601. If the former is correct it would surpass the Norfolk record. The parish of Farrington, Hampshire had only two incumbents in a 122 year period viz Rev J. Benn (28 Mar 1797 to 1857) and Rev T. H. Massey (1857 to 5 Apr 1919). From 1675 to 1948 the incumbents of Rose Ash, Devon were from 8 generations of the family of Southcomb.

Longest serving chorister

Leonard Thompson (b. 19 Feb 1883) sang with St. Mary's Church choir, Kidderminster, Hereford & Worcester, for 88 years. Having become a chorister in 1876 at the age of 9, Thomas Rogers was appointed vicar's warden in 1966 at Montacute, Somerset.

Parishes Largest and Smallest

The smallest parish in the United Kingdom is The Scares which consists of rocky islets in Luce Bay with an area of 1.10 acres 0.44 ha and included in Wigtown, Dumfries and Galloway. The largest parish is Kilmonivaig in Inverness, Highland with an area of 267,233.03 acres 108 145.46 ha.

Oldest parish register

The oldest part of any parish register surviving in England is a sheet from that of Alfriston, East Sussex recording a marriage on 10 July 1504. Scotland's oldest surviving register is that for Anstruther-Wester, Fife, with burial entries from 1549.

Crowds Largest

The greatest recorded number of human beings assembled with a common purpose was an estimated 12,700,000 at the Hindu festival of Kumbh-Mela, which was held at the confluence of the Yamuna (formerly called the Jumna), the Ganges and the invisible 'Sarasvati' at Allahabad, Uttar Pradesh, India, on 19 Jan 1977. The holiest time during this holiest day since 1833 was during the planetary alignment between 9.28 and 9.40 a.m. during which only 200,000 achieved immersion to wash away the sins of a lifetime. The queue at the grave of the chansonnier and guitarist Vladimir Visotsky, (died 28 July 1980) stretched 10 km 6.2 miles.

Largest funerals

The greatest attendance at any funeral is the estimated 4 million who thronged Cairo, Egypt, for the funeral of President Gamal Abdel Nasser (1918–70) on 1 Oct 1970. The longest funeral in Britain was probably that of Vice Admiral Viscount Nelson on 9 Jan 1806. Ticket-holders were seated in St Paul's Cathedral by 8.30 a.m. Many were unable to leave until after 9 p.m.

Biggest demonstrations

A figure of 2.7 million was published from China for the demonstration against the USSR in Shanghai on 3–4 Apr 1969 following the border clashes, and one of 10 million for the May Day celebrations of 1963 in Peking.

DATE	LOCATION	NUMBER KILLED	DISASTER	NUMBER KILLED	DATE
1347-81	Eurasia. The Black Death (bubonic, pneumonic and septicaemic plague)	75,000,000	Pandemic		1347-1390
1311-40	Mongol extermination of Chinese peasantry	c. 35,000,000	Genocide		Sept-Nov 1918
April-Nov 1969-1971	Worldwide: Influenza	21,640,000	Influenza		1846-1851
Aug 1931	Northern China (revealed May 1981)	c. 20,000,000 ¹	Famine		20 Jan 1606
12-13 Nov 1970	Hwang-ho River, China	3,640,000	Flood		26 Nov 1703
1556	Ganges Delta Islands, Bangladesh	1,000,000	Circular Storm ²		22 April 1884
16 Dec 1920	Shensi Province, China (duration 2 hours)	830,000	Earthquake		21 Oct 1966
6 Aug 1945	Kansu Province, China	180,000	Landslide		10-11 May 1941
13-15 Feb 1945	Hiroshima, Japan	141,000	Atomic Bomb		27 Dec 1836
31 May 1970	Dresden, Germany	c. 50,000	Conventional bombing ³		29 Aug 1782
30 Jan 1945	Yungay, Huacarán, Peru	c. 25,000 ⁴	Alluvion Flood		12 Mar 1884
11 Aug 1979	Wilmington (25,484 tons) German liner torpedoed off Danzig by USSR submarine S-13	c. 7700	Marine (single ship)		16 June 1883
	Manchiru River Dam, Morvi, Gujarat, India	c. 5000	Dam Burst		1 July 1918
1941	Chungking (Zhong qing) China air raid shelter	c. 4000 ⁵	Panic		5 Sept 1887
1917	Hawke's Nest hydroelectric tunnel, W. Virginia, USA	c. 2000	Tunnelling (Silicosis)		14 Oct 1913
1845	Halifax, Nova Scotia, Canada	1963 ⁶	Explosion		2-13 June 1780
May 1942	The Theatre, Canton, China	1670	Fire ⁷ (single building)		22 May 1915
13-16 July 1942	Honkoku Colliery, China (coal dust explosion)	1572	Mining ⁸		28 Dec 1879
18 Nov 1978	New York City anti-conscription riots	c. 1200	Riot		18 June 1972
19-20 Feb 1945	People's Temple cult by cyanide, Jonestown, Guyana	913	Mass Suicide		
6 June 1991	Japanese soldiers, Ramree I., Burma (disputed)	c. 900	Crocodiles		
16 May 1770	Bagmati River, Bihar state, India	>800	Railway		
18 Mar 1925	Dauphine's Wedding, Seine, Paris	>800	Fireworks		
27 Mar 1977	South Central States USA (3 hours)	689	Tornado		
1907	KLM-Pan Am Boeing 747 ground crash, Tenerife	583	Aircraft (Civil)		
1979	Champawat district, India, tigress shot by Col. Jim Corbett	436	Man-eating Animal		
1888	Moradabad, Uttar Pradesh, India	c. 300	Bacteriological & Chemical		
1942	Alexander L. Kiehlund 'Fidel' (10,105 tons), North Sea	246	Hail		
18 Feb 1942	Le Sucoeur rammed in Caribbean	123	Off-Shore Oil Plant		
9 Aug 1973	Bus crashed into irrigation canal, Egypt	130	Submarine		
10 May 1977	Israeli military 'Sea Stallion', West Bank	127	Road (single vehicle) ⁹		
9 Mar 1976	Cavalese resort, Northern Italy	54	Helicopter		
Dec 1952	USSR Expedition on Mount Everest	42	Ski Lift (Cable car)		
27 Mar 1980	Vaal Reefs Gold mine lift fell 1.2 miles 1,93 km	40 ¹⁰	Mountaineering		
23 Dec 1975	Hut in Chinamasa Kraal nr. Umtali, Rhodesia (single bolt)	21	Elevator (Lift)		
13-15 Aug 1979	28th Fastnet Race—23 boats sank or abandoned in Force 11 gale	19	Lightning		
1967	Apollo oxygen fire, Cape Kennedy, Fla., USA	3	Yacht Racing		
1971	Soyuz II re-entry over USSR	3	Space Exploration		
1957-58	Venting of plutonium waste, Kyshtym, USSR	high but undisclosed	Atomic Accident		

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Accidents and Disasters

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¹³ c. 2800 were lost on HM Troopship Lancastria 16,243 tons off St. Nazaire on 17 June 1940. The Princess Alice collision in the Thames with the Bywell Castle off Woolwich on 3 Sept 1878 killed 786.

¹⁴ HM Armed Cruiser Natal blew up off Invergordon killing 428 on 30 Dec 1915.

¹⁵ In July 1912, 3000 were killed in the crush, burned or drowned when London Bridge caught fire at both ends. The death toll in the Great Fire of London of 1666 was only 8. History's first 'fire storm' occurred in the Quebec Yard, Surrey Docks, Southwark, London during the 300-bomb fire in the Blitz on 7-8 Sept 1940. Dockland casualties were 301 killed.

¹⁶ The 213 yd 184.2 m long Great Eastern was towed to 87 yd 81.2 m. The ship was towed to 87 yd 81.2 m. The ship was towed to 87 yd 81.2 m.

ALL SPORTS

See also The Guinness Book of Winners and Champions—£6.95 by Chris Cook, Anne Marshall and Peter Matthews—published by Guinness Superlatives Ltd.

Earliest

The origins of sport stem from the time when self-preservation ceased to be the all-consuming human preoccupation. Archery was a hunting skill in mesolithic times (by c. 8000 BC), but did not become an organised sport until later, certainly c. AD 300, among the Genoese and possibly as early as the 12th century BC, as an archery competition is described in Homer's Iliad. The earliest dated evidence for sport is c. 2750–2600 BC for wrestling. Ball games by girls depicted on Middle Kingdom murals at Beni Hasan, Egypt have been dated to c. 2050 BC.

Fastest

The highest speed reached in a non-mechanical sport is in sky-diving, in which a speed of 185 mph 298 km/h is attained in a head-down free falling position, even in the lower atmosphere. In delayed drops speeds of 625 mph 1005 km/h have been recorded at high rarefied altitudes. The highest projectile speed in any moving ball game is c. 188 mph 302 km/h in pelota. This compares with 170 mph 273 km/h (electronically-timed) for a golf ball driven off a tee.

Slowest

In wrestling, before the rules were modified towards 'brighter wrestling', contestants could be locked in holds for so long that a single bout once lasted for 11 hr 40 min. In the extreme case of the 2 hr 41 min pull in the regimental tug o' war in Jubbulpore, India, on 12 Aug 1889, the winning team moved a net distance of 12 ft 3.6 m at an average speed of 0.00084 mph 0.00135 km/h.

Longest

The most protracted sporting contest was an automobile duration test of 222,621 miles 358 273 km (equivalent to 8.93 times around the equator) by Appaurchaux and others in a Ford Taunus at Miranas, France. This was contested over 142 days in July–Nov 1963.

The most protracted non-mechanical sporting event is the *Tour de France* cycling race. In 1926 this was over 3569 miles 5743 km lasting 29 days but is now reduced to 23 days.

Largest stadium

For details of the world's largest stadium see pp. 20–21.

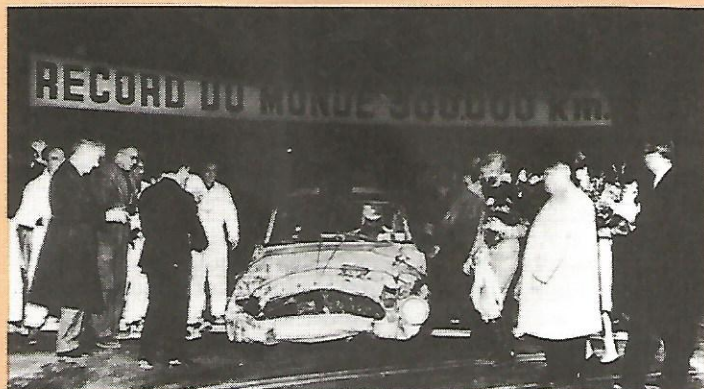
Largest pitch

The largest pitch of any ball game is that of polo, with 12.4 acres 5.0 ha, or a maximum length of 300 yd 274 m and a width, without side boards, of 200 yd 182 m. With boards the width is 160 yd 146 m. Twice a year in the Parish of St Columb Major, Cornwall, a game called Hurling (not to be confused with the Irish game) is played on a 'pitch' which consists of the entire Parish, approximately 25 square miles 64.7 km².

Youngest and oldest world record breakers

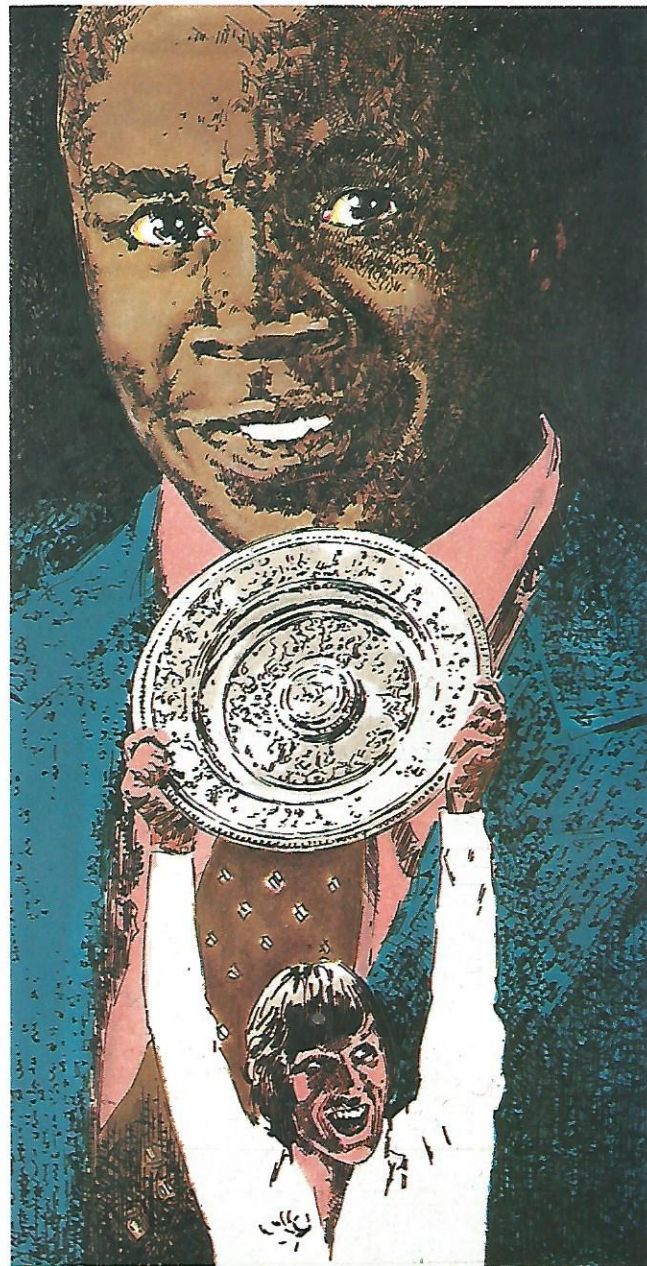
The youngest age at which any person has broken a non-mechanical world record is 12 years 298 days for Gertrude Caroline Ederle (USA) (b. 23 Oct 1906) who broke the women's

The Ford Taunus shows the wear and tear of the world's longest sporting test of 142 days in 1963. (Ford Motor Co.)

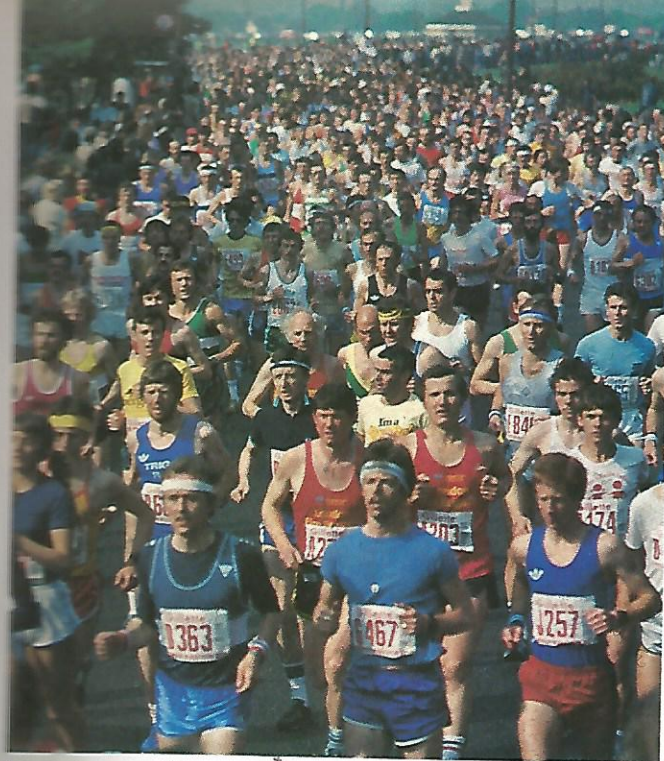


12. Sports, Games and Pastimes

GUINNESS BOOK OF RECORDS



Greatest earnings



Some of the record field of 16,350 in the second London Marathon, in which only one in five of about 80,000 entrants was able to run. (All-Sport)

880 yd freestyle world record with 13 min 19.0 sec at Indianapolis, USA, on 17 Aug 1919. Irish-born John J. Flanagan (1868–1938), triple Olympic hammer-throw champion for the US, 1900–8, set his last world record of 184 ft 4 in 56, 18 m at New Haven, Conn., USA, on 24 July 1909 aged 41 years 196 days.

Youngest and oldest champions

The youngest successful competitor in a world title event was a French boy, whose name is not recorded, who coxed the Netherlands' Olympic pair at Paris on 26 Aug 1900. He was not more than ten and may have been as young as seven. The youngest individual Olympic winner was Marjorie Gestring (USA) (b. 18 Nov 1922), who took the springboard diving title at the age of 13 years 268 days at the Olympic Games in Berlin on 12 Aug 1936. Oscar Gomer Swahn (Sweden) (1847–1927) was aged 64 years 258 days when he won a gold medal in the 1912 Olympic Running Deer team shooting competition.

Youngest and oldest internationals

The youngest age at which any person has won international honours is eight years in the case of Joy Foster, the Jamaican singles and mixed doubles table tennis champion in 1958. The youngest British international has been diver Beverley Williams (b. 5 Jan 1957), who was 10 years 268 days old when she competed against the USA at Crystal Palace, London, on 30 Sept 1967. It would appear that the greatest age at which anyone has actively competed for his country was 72 years 280 days in the case of Oscar Swahn (see above) who won a silver medal for shooting in the Olympic Games at Antwerp on 26 July 1920. He qualified for the 1924 Games but was unable to participate due to illness. Britain's oldest international was Hilda Lorna Johnstone (b. 4 Sept 1902) who was 70 years 5 days when she was placed twelfth in the Dressage competition at the 1972 Games.

Most versatile

All-round ability is measured by level of attainment in highly varied pursuits. By these parameters Charlotte 'Lottie' Dod (1871–1960) stands supreme. She won the Wimbledon Singles title five times between 1887 and 1893, the British Ladies Golf Championship in 1904, an Olympic silver medal for archery in 1908, and represented England at hockey in 1899. She also excelled at skating and tobogganing. Charles Burgess Fry (GB) (1873–1956) was probably the most versatile male sportsman at the highest level. On 4 Mar 1893 he equalled the world long jump record of 23 ft 6½ in 7, 17 m. He represented England v Ireland at soccer (1901) and played first-class Rugby for the Barbarians. His greatest achievements were at cricket, where he

headed the English batting averages in six seasons and captained England in 1912. He was an excellent angler and tennis player.

Most prolific record breaker

Between 24 Jan 1970 and 1 Nov 1977 Vasili Alexeyev (USSR) (b. 7 Jan 1942) broke 80 official world records in weightlifting.

Longest reign

The longest reign as a world champion is 33 years (1829–62) by Jacques Edmond Barre (France) (1802–73) at real tennis. The longest reign as a British champion is 41 years by the amateur Alice Blanche Legh (1855–1948) who first won the Championship in 1881 and for the 23rd and final time in 1922 aged 67.

Shortest reign

Olga Rukavishnikova (USSR) (b. 13 Mar 1955) held the pentathlon world record for only 0.4 sec at Moscow on 24 July 1980. That is the difference between her second place time of 2 min 04.8 sec in the final 800 m event of the Olympic five-event competition, and that of the third-placed Nadezda Tkachenko (USSR), whose overall points came to more than Rukavishnikova's total—5083 points to 4937 points.

Heaviest sportsmen

The heaviest sportsman of all-time was the professional wrestler William J. Cobb of Macon, Georgia, USA, who in 1962 was billed as the 802 lb (57 st 4 lb 363 kg) 'Happy Humphrey'. The heaviest player of a ball-game was the 487 lb 221 kg Bob Powers, the US Football tackle formerly on the 1967 Santa Barbara High School Team, California, USA. The current heaviest in British sport are professional wrestlers 'The Masked Bulk' (Tommy Thomas) and 'Giant Haystacks' (Luke McMasters), both fighting up to 550 lb 247 kg (39 stone).

Greatest earnings

The greatest fortune amassed by an individual in sport is an estimated \$69 million by the boxer Muhammad Ali Haj (USA) in 1960–81. The highest paid woman athlete in the world is tennis player Martina Navratilova (b. Prague, Czechoslovakia, 18 Oct 1956) who had official earnings of \$865,437 in 1981.

Biggest sports contract

In March 1982, the National Football League concluded a deal worth \$2000 million for five years coverage of American Football by the three major TV networks, ABC, CBS and NBC. This represents \$14.2 million for each league team.

Most expensive

The most expensive of all sports is the racing of large yachts—type boats, last built in 1937, and International 12-metre boats. The owning and racing of these is beyond the means of individual millionaires and is confined to multi-millionaires or syndicates.

Largest crowd

The greatest number of live spectators for any sporting spectacle is the estimated 2,500,000 who annually line the route of the New York Marathon. However, spread over 23 days, it is estimated that more than 10,000,000 see the annual *Tour de France* along the route (see page 239).

The largest crowd travelling to any single sporting venue is 'more than 400,000' for the annual *Grand Prix d'Endurance* motor race on the Sarthe circuit near Le Mans, France. The record stadium crowd was one of 199,854 for the Brazil v. Uruguay soccer match in the Maracana Municipal Stadium, Rio de Janeiro, Brazil, on 16 July 1950.

Most participants

The *Round the Bays*, 6.5 mile 10.5 km run in Auckland, New Zealand attracted an estimated 80,000 runners on 27 Mar 1982. In May 1971, the 'Ramblin' Raft Race' on the Chattahoochee River, at Atlanta, Georgia, USA, attracted 37,683 competitors on 8304 rafts. The most runners in a marathon were the 16,350 in the London marathon on 9 May 1982, of whom 15,174 finished.

Most officials

Lawn tennis is the sport with the highest ratio of officials to

participants. For a singles match there should be 13—ten line, one net-cord and one foot-fault judge, in addition to the umpire.

Largest following

The sport with most regular participants in Britain is angling with 3.7 million in 1980. 21,907,569 spectators watched Association Football matches in Britain in 1980–1. The peak total for English Football League matches alone was 41,271,414 in 1948–49. The largest television audience for a single sporting event, excluding Olympic events, was an estimated 400 million who saw the final of the 1978 Soccer World Cup (see also p. 114).

Most sportsmen

According to a report in 1978, 55 million people are active in sports in the USSR. The country has 3282 stadiums, 1435 swimming pools and over 66,000 indoor gymnasia. It is estimated that some 29 per cent of the population of E. Germany participate in sport regularly.

Worst disasters

The worst sports disaster in recent history was when an estimated 604 were killed after some stands at the Hong Kong Jockey Club racecourse collapsed and caught fire on 26 Feb 1918. During the reign of Antoninus Pius (AD 138–161) the upper wooden tiers in the Circus Maximus, Rome, collapsed during a gladiatorial combat killing some 1112 spectators. Britain's worst sports disaster was when 66 were killed and 145 injured at the Rangers v. Celtic football match at Exit 13 of Ibrox Park stadium, Glasgow on 2 Jan 1971.

AEROBATICS

Earliest

The first aerobatic 'manoeuvre' is generally considered the sustained inverted flight in a Bleriot of Célestin-Adolphe Pégoud (1889–1915), at Buc, France on 21 Sept 1913, but Lieut. Peter Nikolayevich Nesterov (1887–1914), of the Imperial Russian Air Service, performed a loop in a Nieuport Type IV monoplane at Kiev, USSR on 27 Aug 1913.

World Championships

Held biennially since 1960 (excepting 1974), scoring is based on the system devised by Col José Aresti of Spain. The competitions consist of two compulsory and two free programmes. The team competition has been won on four occasions by the USSR. No individual has won more than one title, the most successful competitor being Igor Egorov (USSR) who won in 1970, was second in 1976, fifth in 1972 and eleventh in 1968. The most successful in the women's competition has been Lidia Leonova (USSR) with first place in 1976, second in 1978, third in 1972 and fifth in 1970. The USA had a clean sweep of all the medals in 1980. The only medal achieved by Britain has been a bronze in the team event at Kiev, USSR in 1976. The highest individual placing by a Briton is fourth by Neil Williams (1935–77) in 1976.

Inverted flight

The duration record for inverted flight is 4 hr 9 min 5 sec by John 'Hal' McClain in a Swick Taylorcraft on 23 Aug 1980 over Houston International Raceways, Texas, USA.

Loops

On 21 June 1980, R. Steven Powell performed 2315½ inside loops in a Bellanca Decathalon over Almont, Michigan, USA. John McClain achieved 180 outside loops in a Bellanca Super Decathalon on 2 Sept 1978 over Houston, Texas, USA.

ANGLING

For further information on fishing see The Guinness Guides to Salt Water Angling by Brian Harris, to Game Fishing by Dr William Currie, and to Course Fishing by Michael Prichard and Michael Shepley, published by Guinness Superlatives at £10.95, £9.95 and £10.95 respectively.

Catch Largest Single

The largest officially ratified fish ever caught on a rod is a man-eating great white shark (*Carcharodon carcharias*) weighing 2664 lb 1208 kg and measuring 16 ft 10 in 5.13 m long, caught on a 130 lb 58 kg test line by Alf Dean at Denial Bay, near Ceduna, South Australia, on 21 Apr 1959. A great white shark weighing 3388 lb 1537 kg was caught by Clive Green off Albany,

Western Australia, on 26 Apr 1976 but will remain unrattified as whale meat was used as bait. The biggest ever rod-caught fish by a British angler is a 1260 lb 571.5 kg black marlin, by Edward A. Crutch off Cairns, Queensland, Australia on 19 Oct 1973.

In June 1978 a great white shark measuring 29 ft 6 in 9.00 m in length and weighing over 10,000 lb 4536 kg was harpooned and landed by fishermen in the harbour of San Miguel, Azores.

The largest marine animal ever killed by hand harpoon was a blue whale 97 ft 29.56 m in length, by Archer Davidson in Two-fold Bay, New South Wales, Australia, in 1910. Its tail flukes measured 20 ft 6.09 m across and its jaw bone 23 ft 4 in 7.11 m.

The largest fish ever caught in a British river was a 388 lb 175.99 kg sturgeon (9 ft 2 in 2.79 m long) landed by Alec Allen (1895–1972), helped by David Price, from the River Towy, between Llandilo and Carmarthen, S Wales, on 25 July 1933.

Catch Smallest

The smallest fish to win a competition is a smelt, weighing 1/16 oz 1 dram, caught by Peter Christian at Buckenham Ferry, Norfolk, England on 9 Jan 1977, in defeating 107 other competitors. For the smallest full-grown fish see p. 44.

Spear fishing

The largest fish ever taken underwater was an 804 lb 364 kg giant black grouper or jewfish by Don Pinder of the Miami Triton Club, Florida, USA, in 1955. The British spear-fishing record is 89 lb 40.36 kg for an angler fish by James Brown (Weymouth Association Divers) in 1969.

Championship records World

The *Confederation Internationale de la Pêche Sportive* championships were inaugurated as European championships in 1953. They were recognised as World Championships in 1957. France won twelve times between 1956 and 1981 and Robert Tesse (France) took the individual title uniquely three times, in 1959–

Ken Fraser, from Prince Edward Island, Canada, with his world record tuna, weighed in at 1496 lb., which took him 45 minutes to land.



60, 1965. The record weight (team) is 76 lb 8 oz 8 dr 34 kg 715 in 3 hr by West Germany on the Neckar at Mannheim, West Germany on 21 Sept 1980. The individual record is 37 lb 7 oz 3 dr 16 kg 990 by Wolf-Rüdiger Kremkus (West Germany) at Mannheim on 20 Sept 1980. The most fish caught is 652 by Jacques Isenbaert (Belgium) at Dunajvaros, Yugoslavia on 27 Aug 1967.

Championship records British

The National Angling Championship (instituted 1906) has been won seven times by Leeds (1909–10, 1914, 1928, 1948–9, 1952). Only James H. R. Bazley (Leeds) has ever won the individual title twice (1909, 1927). The record catch is 76 lb 9 oz 34 kg 720 by David Burr (Rugby) in the Huntspill, Somerset in 1965. The largest single fish caught in the Championships is a carp of 14 lb 2 oz 6 kg 406 by John C. Essex on 13 Sept 1975 on the River Nene, Peterborough. The team record is 136 lb 15¼ oz 62 kg 120 by Sheffield Amalgamated, also in the Huntspill in 1955.

Match fishing

In a sweepstake on the Silles River, a tributary of the Erne, Co. Fermanagh, Ulster, on 14 May 1981, Peter Burrell weighed in 258 lb 9½ oz 117,29 kg of fish in the five hour open event.

Casting records

The longest freshwater cast ratified under ICF (International Casting Federation) rules is 175,01 m 574 ft 2 in by Walter Kummerow (W. Germany), for the Bait Distance Double-Handed 30 g event held at Lenzerheide, Switzerland in the 1966 Championships. The British National record is 148,78 m 488 ft 1 in by Andy Dickison on the same occasion. The longest Fly Distance Double-Handed cast is 78,38 m 257 ft 2 in by Sverre Scheen (Norway), also at Lenzerheide in September 1968. Peter Anderson set a British National professional record of 70,50 m 231 ft 3 in on water at Scarborough on 11 Sept 1977, and Hugh Newton cast 80,47 m 264 ft on land at Stockholm, Sweden on 20 Sept 1978. The UK Surfcasting Federation record (150 g 5¼ oz weight) is 726 ft 5 in 221,41 m by Les Baldry at Southampton on 6 June 1982.

Longest fight

The longest recorded individual fight with a fish is 32 hr 5 min by Donal Heatley (b. 1938) (New Zealand) with a black marlin (estimated length 20 ft 6,09 m and weight 1500 lb 680 kg) off Mayor Island off Tauranga, North Island on 21–22 Jan 1968. It towed the 12 ton/tonnes launch 50 miles 80 km before breaking the line.

BRITISH RECORDS

New records ratified since June 1981 by the British Record [rod-caught] Fish Committee of the National Angler's Council. For the full list see the 28th edition of the *Guinness Book of Records*.

Species	Weight lb oz dr	kg/g	Name of Angler	Location	Date
FRESHWATER FISH					
Bullhead (Miller's Thumb)	12	0,21	E. Whalley	Cawthorne, Yorkshire	29 June 1981
Minnow	13	0,23	R. Merrifield	River Calder, Nelson Lancs	17 July 1981
Tench	10 1 4	4,571	A. J. Chester	Wilstone Reservoir, Tring, Herts	17 June 1981
Trout, American Brook	5 13 8	2,650	A. Pearson	Avington Fishery, Winchester, Hants	13 Aug 1981
SEA FISH					
Garfish	3 0 2	1,363	J. Nardini	Penzance, Cornwall	5 Sept 1981
Mullet, thin-lipped grey	6 4 0	2,835	H. Mepharm	Scotts Float Sluice, Kentish Rother	2 Aug 1981
Sea Scorpion, short spined	2 7 8	1,119	B. G. Logan	Seaton Sluice Rocks, Whitley Bay, Tyne & Wear	22 Jan 1982
Wrasse, Ballan	9 6 0	4,252	M. Goodacre	Eddystone Gully	21 Oct 1981

WORLD RECORDS

The complete list of Freshwater fish [All Tackle] ratified by the International Game Fish Association as at January 1982

Species	Weight lb.oz	kg/g	Name of Angler	Location	Date
Bass, largemouth	22 4	10,09	George W. Perry	Montgomery Lake, Georgia, USA	2 June 1932
Bass, peacock	21 0	9,52	David Orndorf	Orinoco River, Colombia	6 Feb 1981
Bass, redeye	8 3	3,71	David A. Hubbard	Flint River, Georgia, USA	23 Oct 1977
Bass, rock	3 0	1,36	Peter Gulgin	York River, Ontario, Canada	1 Aug 1974
Bass, smallmouth	11 15	5,41	David L. Hayes	Dale Hollow Lake, Kentucky, USA	9 July 1955
Bass, spotted	8 15	4,05	Philip C. Terry Jr.	Smith Lake, Alabama, USA	18 Mar 1978
Bass, white	5 9	2,52	David S. Cordill	Colorado River, Texas, USA	31 Mar 1977
Bass, whiterock	20 6	9,24	Danny Wood	Savannah River, Augusta, Georgia, USA	28 May 1981
Bass, yellow	2 4	1,02	Donald L. Stalker	Lake Monroe, Indiana USA	27 Mar 1977
Bluegill	4 12	2,15	T. S. Hudson	Ketona Lake, Alabama, USA	9 Apr 1950
Bowfin	21 8	9,75	Robert L. Harmon	Forest Lake, Florence, SC, USA	29 Jan 1980
Buffalo, bigmouth	70 5	31,89	Delbert Sisk	Bussey Brake Bastrop, LA, Cal, USA	21 Apr 1980
Buffalo, smallmouth	51 0	23,13	Scott Butler	Lawrence, Kansas, USA	2 May 1979
Bullhead, black	8 0	3,62	Kani Evans	Lake Waccabuc, New York, USA	1 Aug 1951
Burbot	18 4	8,27	Thomas Courtemanche	Pickford, Michigan, USA	31 Jan 1980
Carp ¹	55 5	25,08	Frank J. Ledwein	Clearwater Lake, Minnesota, USA	10 July 1952
Catfish, blue	97 0	43,99	Edward B. Elliott	Missouri River, South Dakota, USA	16 Sept 1959
Catfish, channel	58 0	26,30	W. B. Whaley	Santee-Cooper Res., South Carolina, USA	7 July 1964
Catfish, flathead	79 8	36,06	Glenn T. Simpson	White River, Indiana, USA	13 Aug 1966
Catfish, white	10 5	4,67	Lewis W. Lomerson	Raritan River, New New Jersey, USA	23 June 1976
Char, Arctic	29 11	13,46	Jeanne P. Branson	Arctic River, N.W. Terr. Canada	21 Aug 1968
Crappie, black	6 0	2,72	Lettie Theresa Robertson	Seaplane Canal, Westwego, Louisiana, USA	28 Nov 1969
Crappie, white	5 3	2,35	Fred L. Bright	Enid Dam, Mississippi, USA	31 July 1957
Dolly Varden	3 13	1,72	Roy Lawson	Unalakleet River, Alaska, USA	29 Aug 1980
Drum, freshwater	54 8	24,72	Benny E. Hull	Nickajack Lake, Tennessee, USA	20 Apr 1972
Gar, alligator	279 0	126,55	Bill Valverde	Rio Grande River, Texas, USA	2 Dec 1951
Gar, Florida	21 3	9,61	Jeff Sabol	Boca Raton, Florida, USA	3 June 1981
Gar, longnose	50 5	22,82	Townsend Miller	Trinity River, Texas, USA	30 July 1954
Grayling, Arctic	5 15	2,69	Jeanne P. Branson	Katseyadie River, N.W. Terr., Canada	16 Aug 1967
Huchen	70 12	32,09	Martin F. P. Esterl	Carinthia, Austria	1 Jan 1980
Inconnu	33 9	15,22	John A. Berg	Kobuk River, Alaska, USA	29 Aug 1981
Kokanee	6 9	2,99	Jerry Verge	Priest Lake, Idaho, USA	9 June 1975
Muskellunge	69 15	31,72	Arthur Lawton	St. Lawrence River, New York, USA	22 Sept 1957
Perch, white	4 12	2,15	Mrs. Earl Small	Messalonskee Lake, Maine, USA	4 June 1949
Perch, yellow	4 3	1,91	Dr. C. C. Abbot	Bordentown, New Jersey, USA	May 1865
Pickereel, chain	9 6	4,25	Baxley McQuaig, Jr.	Homerville, Georgia, USA	17 Feb 1961
Pike, Northern	62 8	28,35	Jürg Nötzli	Reuss-Weiher, Rickenbach, Switzerland	15 June 1979
Redhorse, silver	5 14	2,67	Ernest Harley, Jr.	Shelbyville, Indiana, USA	20 Oct 1980
Salmon, Atlantic	79 2	35,89	Henrik Henriksen	Tana River, Norway	1928
Salmon, chinook ²	93 0	42,18	Howard C. Rider	Kelp Bay, Alaska, USA	24 June 1977
Salmon, chum	27 3	12,33	Robert A. Jahnke	Raymond Cove, Alaska, USA	11 June 1977
Salmon, coho	31 0	14,06	Mrs. Lee Halberg	Cowichan Bay, B.C., Canada	11 Oct 1947

¹ A carp weighing 83 lb 8 oz 37 kg 874 was taken (not by rod) near Pretoria, South Africa

² A salmon weighing 126 lb 8 oz 57 kg 379 was taken (not by rod) near Petersburg, Alaska

Species	Weight lb.oz.	kg/g	Name of Angler	Location	Date
Salmon, landlocked	22 8	10.20	Edward Blakely	Sebago Lake, Maine, USA	1 Aug 1907
Salmon, pink	12 9	5.69	Steven Alan Lee	Moose & Kenai Rivers, Alaska, USA	17 Aug 1974
Sauger	8 12	3.96	Mike Fischer	Lake Sakakawea, North Dakota, USA	6 Oct 1971
Shad, American	9 4	4.19	J. Edward Whitman	Delaware River, Penn, USA	26 Apr 1970
	9 4	4.19	Edward W. Cypus	Connecticut River, Wilson, Conn, USA	20 Apr 1981
Sturgeon ³	407 0	184.61	Raymond Pittenger	Sacramento River, Colusa, Cal, USA	10 May 1979
Sunfish, green	2 2	0.96	Paul M. Dilley	Stockton Lake, Missouri, USA	18 June 1971
Sunfish, redbreast	1 8	0.69	Tommy D. Cason, Jr.	Suwannee River, Florida, USA	30 Apr 1977
Sunfish, redear	4 8	2.04	Maunce E. Ball	Chase City, Virginia, USA	19 June 1970
Trout, brook	14 8	6.57	Dr. W. J. Cook	Nipigon River, Ontario, Canada	July 1916
Trout, brown	35 15	16.30	Eugenio Cavaglia	Nahuel Huapi, Argentina	16 Dec 1952
Trout, bull	32 0	14.51	N. L. Higgins	Lake Pend, Oreille, Idaho, USA	27 Oct 1949
Trout, cutthroat	41 0	18.59	John Skimmerhorn	Pyramid Lake, Nevada, USA	Dec 1925
Trout, golden	11 0	4.98	Chas. S. Reed	Cook's Lake, Wyoming, USA	5 Aug 1948
Trout, lake ⁴	65 0	29.48	Larry Daunis	Great Bear Lake, N.W. Terr., Canada	8 Aug 1970
Trout (rainbow, steelhead, or kallloops)	42 2	19.10	David Robert White	Beli Island, Alaska, USA	22 June 1970
Trout, sunapee	11 8	5.21	Ernest Theoharis	Lake Sunapee, New Hampshire, USA	1 Aug 1954
Trout, tiger	20 13	9.44	Pete M. Friedland	Lake Michigan, Wisconsin, USA	12 Aug 1978
Walleye	25 0	11.34	Mabry Harper	Old Hickory Lake, Tennessee, USA	1 Aug 1980
Warmouth	2 2	0.97	Mabry Harper	Old Hickory Lake, Tennessee, USA	1 Aug 1980
Whitefish, lake	13 15	6.32	Wayne Caswell	Meaford, Ontario, Canada	19 Apr 1981
Whitefish, mountain	5 0	2.26	Orville Weich	Athabasca River, Alberta, Canada	3 June 1963

³ An 834 lb 378.30 kg sturgeon was landed (not by rod) by Garry Oling at Albion, British Columbia, Canada, from the Fraser River on 11 Aug 1981.

⁴ A 102 lb 46 kg 266 trout was taken from Lake Athabasca, northern Saskatchewan, Canada, on 8 Aug 1961.

WORLD RECORDS

The complete list of Sea fish [All Tackle] ratified by the International Game Fish Association as at January 1982

Species	Weight lb.oz.	kg/g	Name of Angler	Location	Date
Albacore	88 2	40.00	Siegfried Dickenmann	Mogan Port, Gran Canaria, Canary I.	19 Nov 1977
Amberjack, greater	155 10	70.59	Joseph Dawson	Challenger Bank, Bermuda	24 June 1981
Barracuda, great ¹	83 0	37.64	K. J. W. Hackett ²	Lagos, Nigeria	13 Jan 1952
Bass, black sea	8 12	3.96	Joe W. Mizelle	Oregon Inlet, N. Carolina, USA	21 Apr 1979
Bass, giant sea	563 8	255.60	James D. McAdam, Jr.	Anacapa Island, California, USA	20 Aug 1968
Bass, striped	76 0	34.47	Robert A. Rocchetta	Montauk, LI, NY, USA	17 July 1981
Bluefish	31 12	14.40	James M. Hussey	Hatteras, North Carolina, USA	30 Jan 1972
Bonfish	19 0	8.61	Brian W. Batchelor	Zululand, South Africa	26 May 1962
Bonito, Atlantic	16 12	7.60	Rolf Fedderies	Puerto Rico, Gran Canaria, Canary Is.	6 Dec 1980
Bonito, Pacific	23 8	10.65	Mrs. Anne Cochain	Victoria, Mahe, Seychelles	19 Feb 1975
Cobia	110 5	50.03	Eric Tinworth	Mombasa, Kenya	8 Sept 1964
Cod	98 12	44.79	Alphonse J. Bielevich	Isle of Shoals, New Hampshire, USA	8 June 1969
Cubera snapper	60 12	27.55	Dr. Richard A. Klein	Miami Beach, Florida, USA	27 Feb 1980
Dolphin	87 0	39.46	Manuel Salazar	Papagallo Gulf, Costa Rica	25 Sept 1976
Drum, black	113 1	51.26	Gerald M. Townsend	Lewes, Delaware, USA	15 Sept 1975
Drum, red	90 0	40.82	Elvin Hooper	Rodanthe, North Carolina, USA	7 Nov 1973
Flounder, summer	22 7	10.17	Charles Nappi	Montauk, New York, USA	15 Sept 1975
Halibut, Atlantic	250 0	113.4	Louis P. Sirard	Gloucester, Mass., USA	3 July 1981
Halibut, Californian	42 0	19.05	Jerry Yahiro	Santa Rosa Island, California, USA	24 May 1981
Halibut, Pacific	235 0	106.59	Norbert U. Koch	Juneau, Alaska, USA	15 Sept 1980
Jack, crevalle	51 0	23.13	Stephen V. Schwenk	Lake Worth, Florida, USA	20 June 1978
Jack, horse-eye	23 2	10.50	Norman A. Carpenter	Cancun, Mexico	2 Oct 1981
Jewfish	680 0	308.44	Lynn Joyner	Fernandina Beach, Florida, USA	20 May 1961
Kawakawa	26 0	11.80	Wally Elfring	Merimbula, NSW, Australia	26 Jan 1980
Mackerel, king	90 0	40.82	Norton I. Thornton	Key West, Florida, USA	16 Feb 1976
Marlin, black	1 560 0	707.61	Alfred C. Glassell, Jr.	Cabo Blanco, Peru	4 Aug 1953
Marlin, blue (Atl.)	1 282 0	581.51	Larry Martin	St. Thomas, Virgin Islands	6 Aug 1977
Marlin, blue (Pac.)	1 153 0	522.99	Greg D. Perez	Ritidian Point, Guam	21 Aug 1969
Marlin, striped	417 8	189.37	Phillip Bryers	Cavalli Islands, New Zealand	14 Jan 1977
Marlin, white	181 14	82.49	Evando Luiz Coser	Vitoria, Brazil	8 Dec 1979
Permit	51 8	23.35	William M. Kenney	Lake Worth, Florida, USA	28 Apr 1978
Pollock	46 7	21.06	John Tomes Holton	Brielle, New Jersey, USA	26 May 1975
Pompano, African	41 8	18.82	Wayne Sommers	Fort Lauderdale, Florida, USA	15 Feb 1979
Roosterfish	114 0	51.71	Abe Sackheim	La Paz, Baja, Mexico	1 June 1960
Runner, rainbow	33 10	15.25	Ralph A. Mikkelsen	Clarion Island, Mexico	14 Mar 1976
Sailfish (Atlantic)	128 1	58.10	Harm Steyn	Luanda, Angola	27 Mar 1974
Sailfish (Pacific)	221 0	100.24	C. W. Stewart	Santa Cruz Island, Ecuador	12 Feb 1947
Seabass, white	83 12	37.98	L. C. Baumgardner	San Felipe, Mexico	31 Mar 1953
Seatrout, spotted	16 0	7.25	William Katko	Mason's Beach, Virginia, USA	28 May 1977
Shark, blue	437 0	198.22	Peter Hyde	Catherine Bay, N.S.W., Australia	2 Oct 1976
Shark, hammerhead	717 0	325.23	Richard Edward Morse	Jacksonville Beach, Florida, USA	27 July 1980
Shark, porbeagle	465 0	210.92	Jorge Potier	Padstow, Cornwall, England	23 July 1976
Shark, shortfin mako ³	1 080 0	489.88	James L. Melanson	Montauk, New York, USA	26 Aug 1979
Shark, thresher ⁴	802 0	363.80	Dianne North	Tutukaka, New Zealand	8 Feb 1981
Shark, tiger	1 780 0	807.40	Walter Maxwell	Cherry Grove, S. Carolina, USA	14 June 1964
Shark, white	2 664 0	1208.38	Alfred Dean	Ceduna, South Australia	21 Apr 1959
Skipjack, black	14 8	6.57	Lorraine Carlton	Cabo San Lucas, Baja, Mexico	24 May 1977
Snook	53 10	24.32	Gilbert Ponzi	Rio de Paramina, Costa Rica	18 Oct 1978
Spearfish	90 13	41.20	Joseph Larkin	Maderia Is.	2 June 1980
Swordfish	1 182 0	536.15	L. Marron	Iquique, Chile	7 May 1953
Tanguigue	85 6	38.75	Barry Wrightson	Rottneest Island, West Australia	5 May 1978
Tarpon	283 0	128.36	M. Salazar	Lake Maracaibo, Venezuela	19 Mar 1956
Tautog	21 6	9.69	R. N. Sheaffer	Cape May, New Jersey, USA	12 June 1954
Trevally, giant	116 0	52.61	William G. Foster	Pago Pago, American Samoa	20 Feb 1978
Tuna, bigeye (Atl.)	375 8	170.32	Cecil Browne	Ocean City, Maryland, USA	26 Aug 1977
Tuna, bigeye (Pac.)	435 0	197.31	Dr. Russel V. A. Lee	Cabo Blanco, Peru	17 Apr 1957
Tuna, blackfin	42 0	19.05	Alan J. Card	Bermuda	2 June 1978
Tuna, bluefin	1 496 0	679.00	Ken Fraser	Aulds Cove, Nova Scotia, Canada	26 Oct 1979
Tuna, dogtooth	194 0	88.00	Kim Chul I	Kwan Tal Is, CheJu-Do, Korea	27 Sept 1980
Tuna, longtail	65 0	29.50	Michael James	Port Stephens, N.S.W., Australia	20 Apr 1978
Tuna, skipjack	40 0	18.14	Joseph R. P. Caboche, Jr.	Baie du Tambeau, Mauritius	19 Apr 1971
Tuna, southern bluefin	348 5	158.00	Rex Wood	Whakatane, New Zealand	16 Jan 1981
Tuna, yellowfin	388 12	176.35	Curt Wiesenhutter	San Benedicto I. Mexico	1 Apr 1977
Tunny, little	27 0	12.24	William E. Allison	Key Largo, Florida, USA	20 Apr 1976
Wahoo	149 0	67.58	John Pirovano	Cat Cay, Bahamas	15 June 1962
Weakfish	17 14	8.10	William H. Herold	Rye, New York, USA	31 May 1980
Yellowtail, California	71 15	32.65	Michael Carpenter	Alijos Rocks, Mexico	24 June 1979
Yellowtail, southern	111 0	50.34	A. F. Pilm	Bay of Islands, New Zealand	11 June 1961

¹ A barracuda weighing 103 lb 4 oz 46 kg 826 was caught on an untested line by Chester Benet at West End, Bahamas, on 11 Aug 1932. Another of 48 lb 6 oz 21 kg 942, was caught

³ A 1295 lb 587 kg specimen was taken by two anglers off Natal, South Africa on 17 Mar 1939, and a 1500 lb 680 kg specimen harpooned inside Durban Harbour, South Africa in

ARCHERY

Earliest references

Though the earliest evidence of the existence of bows is seen in the Mesolithic cave paintings in Spain, archery as an organized sport appears to have developed in the 3rd century AD. Competitive archery may however date back to the 12th century BC. The oldest archery body in the British Isles is the Royal Company of Archers, the Sovereign's bodyguard for Scotland, dating from 1676, though the Society of Kilwinning Archers, in Scotland, have contested the Papingo Shoot since 1488. The world governing body is the *Fédération Internationale de Tir à l'Arc* (FITA), founded in 1931.

WORLD RECORDS Single FITA rounds

Event	possible	Name and Country	Points	Year
MEN				
FITA	1440	Darrell Pace (USA)	1341	1979
90m	360	Vladimir Yesheyev (USSR)	322	1980
70m	360	Sante Spigarelli (Italy)	338	1978
50m	360	Sante Spigarelli (Italy)	340	1976
30m	360	Darrell Pace (USA)	356	1978
Team	4320	USSR (Vladimir Yesheyev, Stanislav Zabrodsky, Aleksandr Gabelkov)	3887	1981
WOMEN				
FITA	1440	Natalia Butuzova (USSR)	1324	1982
70m	360	Natalia Butuzova (USSR)	328	1979
60m	360	Ho Jin Kim (Korea)	336	1980
50m	360	Paivi Meriluoto (Fin)	331	1982
30m	360	Valentina Radionova (USSR)	353	1981
Team	4320	USSR (Natalia Butuzova, Keto Lossaberidze, Olga Rogova)	3878	1979

Highest Championship scores

The highest scores achieved in either a world or Olympic championship for Double FITA rounds are: men, 2571 points (possible 2880) by Darrell Pace (USA) at the 1976 Olympic Games in Montreal, Canada, on 29–30 July 1976; and women, 2515 points by Luann Ryon (USA) at Canberra, Australia, 11–12 Feb 1977.

British records

York Round—possible 1296 pts: Single Round, 1142, Peter Waterton at Oxford on 29 June 1977. Double Round, 2238, Peter Waterton at Oxford on 29 June 1977.

Hereford (Women)—possible 1296 pts: Single Round, 1182, Elaine Tomkinson at Bingley on 10 Aug 1980. Double Round, 2331, Sue Willcox at Oxford on 27–28 June 1979.

FITA Round (Men): Single Round, 1265, Steve Hallard at Leicester on 23 Aug 1981. Double Round, 2494, Mark Blenkarne at Leicester, on 5–6 July 1980.

FITA Round (Women's): Single Round, 1271, Rachel Fenwick at Southampton, Hants. on 3 June 1979. Double Round, 2520, Rachel Fenwick at Brussels, Belgium on 12–13 Aug 1978.

Most titles World

The greatest number of world titles (instituted 1931) ever won by a man is four by Hans Deutgen (b. 28 Feb 1917) (Sweden) in 1947–50. The greatest number won by a woman is seven by Janina Spychajowa-Kurkowska (b. 8 Feb 1901) (Poland) in 1931–4, 1936, 1939 and 1947. Oscar Kessels (Belgium) (1904–68) participated in 21 world championships.

Most titles Olympic

Hubert van Innis (1866–1961) (Belgium) won six gold and three silver medals at the 1900 and 1920 Olympic Games.

Most titles British

The greatest number of British Championships is 12 by Horace Alfred Ford (1822–80) in 1849–59 and 1867, and 23 by Alice Blanche Legh (1855–1948) in 1881, 1886–92, 1895, 1898–1900, 1902–9, 1913 and 1921–2. Miss Legh was inhibited from winning from 1882 to 1885—because her mother Piers Legh was Champion—and also for four further years 1915 to 1918 because there were no Championships owing to the First World War.



left to right: Bill Gamero, Jim Ruffley, Bill Chambers and Bill Hand of the Holland Moss Field Archery Club after their 24-hour record.

Flight shooting

The longest recorded distance ever shot is 1 mile 268 yd 1854.40 m in the unlimited footbow class by Harry Drake (b. 1 May 1915) of Lakeside, California, USA at Ivanpah Dry Lake, California on 24 Oct 1971. The female footbow record is 1113 yd 2 ft 6 in 1018.48 m by Arlyne Rhode (b. 4 May 1936) at Wendover, Utah, USA on 10 Sept 1978. Don Brown (b. 13 Nov 1940) (USA) set the flight record for the handbow with 1227 yd 1122.25 m on 5 Oct 1980 and April Moon (b. 9 Sept 1947) (USA) set a women's record of 1039 yd 1 ft 1 in 950.39 m on 13 Sept 1981, both at Ivanpah Dry Lake. Drake holds the crossbow flight record with 1359 yd 2 ft 5 in 1243.4 m at Ivanpah Dry Lake on 14 Oct 1967.

The British record (Men) is 789 yd 1 ft 9 in 721.99 m by Alan Webster at Burton Constable, nr Hull, Humberside on 6 June 1980 and (Women) 456 yd 417.47 m by Julie Ingleby at Burton Constable, on 15 Sept 1979.

Greatest draw

Gary Sentman, of Roseburg, Oregon, USA drew a longbow weighing a record 176 lb 79.83 kg to the maximum draw on the arrow of 28¼ in 72 cm at Forksville, Penn., on 20 Sept 1975.

24 Hours—target archery

The highest recorded score over 24 hours by a pair of archers is 51,633 during 48 Portsmouth Rounds by Jimmy Watt and Gordon Danby at the Epsom Showgrounds, Auckland NZ, on 18–19 Nov 1977.

24 Hours—field archery

The highest recorded score at field archery is 32,682 by a team of four—Bill Chambers, Ben Gramero, Jim Ruffley and Bill Hand of Holland Moss Field Archery Club at Skelmersdale, Lancashire on 18–19 July 1981.

BADMINTON

Origins

A similar game was played in China in the 2nd millennium BC. The modern game may have evolved c 1870 at Badminton Hall in Avon, the seat of the Dukes of Beaufort or from a game played in India. The first modern rules were codified in Poona in 1873. The oldest club is the Newcastle Badminton Club formed as the Armstrong College Club on 24 Jan 1900.

Thomas Cup

The International Championship or Thomas Cup (instituted 1948) has been won seven times by Indonesia in 1958, 1961, 1964, 1970, 1973, 1976 and 1979.

Uber Cup

The Ladies International Championship or Uber Cup (instituted 1956) has been won five times by Japan (1966, 1969, 1972, 1978 and 1981).

Inter County Championship

The championships were instituted on 30 Oct 1930 and Surrey have most wins with 20 between 1955 and 1982.

Most titles

The men's singles in the All-England Championships (instituted 1899) have been won a record eight times by Rudy Hartono Kurniawan (Indonesia) (b. 18 Aug 1948) in 1968-74 and 1976. The greatest number of championships won (incl. doubles) is 21 by G. A. Thomas (later Sir George Alan Thomas, Bt.) (1881-1972) between 1903 and 1928. The women's title has been won ten times by Judy Hashman (*née* Devlin) (USA) (b. 22 Oct 1935) in 1954, 1957-8, 1960-4, 1966-7. She also equalled the greatest number of championships won of 17 by Muriel Lucas (later Mrs King Adams) from 1899 to 1910.

MOST INTERNATIONAL APPEARANCES

	Times	Men	
England	117	Michael G. Tredgett,	1970-82
Scotland	67	Robert S. McCoig, MBE,	1956-76
Ireland	58	Clifford McIlwaine,	1972-82
Wales	51	David Colmer,	1964-80
	Times	Women	
England	75	Gillian M. Gilks MBE (<i>née</i> Perrin),	1966-82
Ireland	57	Yvonne Kelly,	1955-76
Wales	53	Sue Brimble,	1969-82
Scotland	50	Christine Stewart (<i>née</i> Evans),	1970-78

Shortest game

In the 1969 Uber Cup in Jakarta, Indonesia, Noriko Takagi (later Mrs Nakayama) (Japan) beat Poppy Tumengkol (Indonesia) in 9 min.

Longest hit

Frank Rugani drove a shuttlecock 79 ft 8½ in 24.29 m in indoor tests at San José, California, USA, on 29 Feb 1964.

Marathon

The longest singles match is 74 hr 41 min by Mike Watts and Bryan Garnham at Llansamlet Parish Hall, Swansea on 15-18 Oct 1981.

BASEBALL

Earliest game

The Rev Thomas Wilson, of Maidstone, Kent, England, wrote disapprovingly, in 1700, of baseball being played on Sundays. The earliest baseball game under the Cartwright (Alexander Joy Cartwright Jr 1820-92) rules was at Hoboken, New Jersey, USA, on 19 June 1846, with the New York Nine beating the Knickerbockers 23-1 in four innings.

Highest batting average

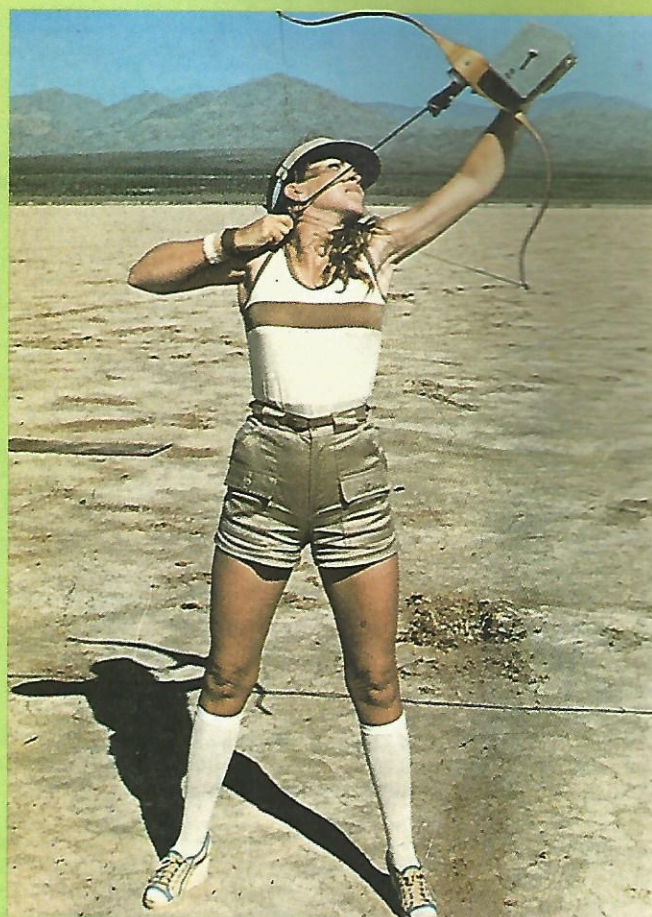
The highest average in a career is 0.367 by Tyrus Raymond Cobb (1886-1961), the 'Georgia Peach' from Augusta who played with Detroit (1905-26) and Philadelphia (1927-8). During his career Ty Cobb made a record 2244 runs from a record 4191 hits made in 3033 major league games. Lin Wen-Nsiung was reported to have an average of 0.727 in Taiwan.

Home runs Most

Henry Louis 'Hank' Aaron (Milwaukee and Atlanta Braves) (b. 5 Feb 1934) holds the major league career home run record of 755 from 1954 to 1976. When he retired in Nov 1980, Japan's Sadaharu Oh (b. 20 May 1940) (Yomiuri Giants) had hit his 868th home run in a 21-yr career. George Herman 'Babe' Ruth's (1895-1948) record for home runs in one year is 60 in 154 games between 15 Apr and 30 Sept 1927. Roger Eugene Maris (b. 10 Sept 1934) (New York Yankees) hit 61 homers in a 162-game schedule in 1961. Joshua Gibson (1911-47) of Homestead Grays and Pittsburgh Crawfords, Negro League clubs, achieved a career total of 800 homers including 75 in 1931, and in 1972 was elected to the Hall of Fame.

Longest home run

The longest home run ever measured was one of 618 ft 188.4 m by Roy Edward 'Dizzy' Carlyle (1900-56) in a minor league



The delightfully named April Moon, the women's world record holder for flight shooting. The ciphor attached to her bow protects the hand. (Dr Charles E. Grayson)



Doubles partners Mike Tredgett and Ray Stevens both broke the record of 100 international appearances for England at badminton in January 1982.

US MAJOR LEAGUE RECORDS

BATTING

Batting av., season	438	Hugh Duffy (NL)	1894
" "	422	Napoleon Lajoie (AL)	1901
RBIs, career	2297	Henry 'Hank' Aaron	1954-76
season	190	Lewis Rober 'Hack' Wilson	1930
game	12	James LeRoy Bottomley	16 Sept 1924
innings	7	Edward Cartwright	23 Sept 1890
Base hits, season	257	George Harold Sisler	1920
Hits, consecutive	12	Michael Franklin 'Pinky' Higgins	19-21 June 1938
" "	12	Walter 'Moose' Dropo	14-15 July 1952
Consecutive games	56	Joseph Paul DiMaggio	15 May-16 July 1941
batted safely			
Stolen bases, career	938	Louis Clark Brock	1961-79
season	118	Louis Clark Brock	1974
Consecutive games	2130	Henry Louis 'Lou' Gehrig	1 June 1925-30 April 1939
played			

PITCHING

Games won, career	511	Denton True 'Cy' Young	1890-1911
season	60	Charles Gardner Radbourne	1884
Consecutive games won	24	Carl Owen Hubbell	1936-37
Strikeouts, career	113	Walter Perry Johnson	1907-27
season	16	George W. Bradley	1876
" "	16	Grover Cleveland Alexander	1916
Strikeouts, career	3508	Walter Perry Johnson	1907-27
season	383	Lynn Nolan Ryan	1973
Wins, career	5	Lynn Nolan Ryan	1966-81
Games run av., season	0.90	Ferdinand Schupp (140 inn)	1916
" "	1.01	Hubert 'Dutch' Leonard (222 inn)	1914
" "	1.12	Robert Gibson (305 inn)	1968
Complete games, career	751	Denton True 'Cy' Young	1890-1911

game at Emeryville Ball Park, California, USA, on 4 July 1929. In 1919 Babe Ruth hit a 587 ft 178.9 m homer in a Boston Red Sox v. New York Giants match at Tampa, Florida, USA.

Longest throw

The longest throw (ball weighs 5-5¼ oz 141-148 g) is 445 ft 10 in 135.88 m by Glen Edward Gorbous (b. Canada 8 July 1930) on 1 Aug 1957. The longest throw by a woman is 296 ft 90.2 m by Mildred Ella 'Babe' Didrikson (later Mrs George Zaharias) (US) (1914-56) at Jersey City, New Jersey, USA on 25 July 1931.

Fastest base runner

The fastest time for circling bases is 13.3 sec by Ernest Evar Swanson (1902-73) at Columbus, Ohio, in 1932, at an average speed of 18.45 mph 29.70 km/h.

Pitching

The only 'perfect game' (no hits, no runs, no walks) pitched in a World Series was by Don Larsen (New York Yankees) (b. 7 Aug 1929) with 97 pitches (71 in the strike zone) against Brooklyn Dodgers on 8 Oct 1956.

Fastest pitcher

The fastest pitcher in the world is Lynn Nolan Ryan (California Angels, Houston Astros) (b. 31 Jan 1947) who, on 20 Aug 1974 at Anaheim Stadium, California, USA, was measured to pitch at 100.9 mph 162.3 km/h.

Youngest player

The youngest major league player of all time was the Cincinnati pitcher, Joseph Henry Nuxhall (b. 30 July 1928) who started his career in June 1944, aged 15 years 10 months 11 days.

Record attendances and receipts

The World Series record attendance is 420,784 (six games with total receipts of \$2,626,973.44) when the Los Angeles (ex-Brooklyn) Dodgers beat the Chicago White Sox 4-2 on 1-8 Oct 1959. The single game record is 92,706 for the fifth game (receipts \$552,774.77) at the Memorial Coliseum, Los Angeles, California, on 6 Oct 1959. The highest seating capacity in a baseball stadium is 76,977 in the Cleveland Municipal Stadium, Ohio, USA. The all-time season record for attendances for both leagues has been 29,193,417 in 1971.

An estimated 114,000 spectators watched a game between Australia and an American Services team in a 'demonstration' event during the Olympic Games at Melbourne, 1 Dec 1956.

Most intensive spectating

Bill Rattray and Joe Hoban of Houston and Miles Berry of Los Angeles watched all 26 League teams in one week, 9-15 April 1982, in 13 cities in the USA and Canada, a round trip of 14,000 miles 22 777 km.

BASKETBALL

Origins

The game of 'Pok-ta-Pok' was played in the 10th century BC, by the Olmecs in Mexico, and closely resembled basketball in its concept. 'Ollamalitzli' was a variation of this game played by the Aztecs in Mexico as late as the 16th century. If the solid rubber ball was put through a fixed stone ring the player was entitled to the clothing of all the spectators. Modern basketball (which may have been based on the German game of *Korbball*) was devised by the Canadian-born Dr James A. Naismith (1861-1939) at the Training School of the International YMCA College at Springfield, Massachusetts, USA, in mid-December 1891. The first game played under modified rules was on 20 Jan 1892. The International Amateur Basketball Federation (FIBA) was founded in 1932, and the English Basket Ball Association in 1936.

Most titles Olympic

The USA won all seven Olympic titles from the time the sport was introduced to the Games in 1936 until 1968, without losing a single match. In 1972 in Munich their run of 63 consecutive victories in matches in the Olympic Games was broken when they lost 50-51 to the USSR in the disputed Final match. They won their eighth title in 1976.

Most titles World

Brazil, USSR and Yugoslavia have won the World Men's Championship (instituted 1950) twice. Brazil won in 1959 and 1963, the USSR in 1967 and 1974 and Yugoslavia in 1970 and 1978. In 1975 the USSR won the Women's Championship (instituted 1953) for the fifth consecutive time since 1959.

Most titles European

The most European Champions Cup (instituted 1957) wins are seven by Real Madrid, Spain. The women's title has been won 18 times by Daugawa, Riga, USSR. The most wins in the European Nations Championships for men is 13 by the USSR, and in the women's event 15 also by the USSR.

Most titles American Professional

The most National Basketball Association (NBA) titles (instituted 1947), played for between the leading professional teams in the United States, have been won by the Boston Celtics with 14 victories between 1957 and 1981.

Most titles British

England has won seven British Championship titles, out of the 14 competitions since the championship was introduced in 1960.

Most titles English

The most English National championship wins (instituted 1936) have been by London Central YMCA, with eight wins in 1957-8, 1960, 1962-4, 1967 and 1969. On 6 Apr 1974 Sutton and Crystal Palace beat Embassy All Stars in a record score for the final of 120-100. The English National League title has been won six times by Crystal Palace 1974, 1976-8, 1980 and 1982.

Most titles English Women's Cup

Most English Women's cups (instituted 1965) have been won by Tigers with eight wins, 1972-3, 1976-80 and 1982.

Highest score International

The highest score recorded in a senior international match is 167 by S. Korea against Thailand (50) in Hong Kong on 13 Sept 1980, in the Asian Women's Championships. The highest score in a junior international match is 184 by the S. Korean women against Indonesia (21) in November 1980. The highest in a British Championship is 125 by England when beating Wales (54) on 1 Sept 1978. England beat Gibraltar 130-45 on 31 Aug 1978.

Highest score match

The highest aggregate score in an NBA match is 337 between the

San Antonio Spurs (171) and the Milwaukee Bucks (166) at San Antonio, Texas on 6 Mar 1982. In an ABA match between the San Diego Conquistadors (176) and the New York Nets (166) on 14 Feb 1975, the score totalled 342 points after four periods of overtime.

Highest score *United Kingdom*

The highest score recorded in a match is 250 by the Nottingham YMCA Falcons *v.* Mansfield Pirates at Nottingham, on 18 June 1974. It was a handicap competition and Mansfield received 120 points towards their total of 145. The highest score in a senior National League match is 165 by Crystal Palace *v.* Bedford (40) on 3 Dec 1977. The highest in the National Cup is 146 by Doncaster *v.* Cleveland (109) on 11 Feb 1976.

Highest score *Individual*

Mats Wermelin, 13, (Sweden) scored all 272 points in a 272-0 win in a regional boys' tournament in Stockholm, Sweden on 5 Feb 1974. The highest single game score in an NBA game is 100 points by Wilton Norman Chamberlain (b. 21 Aug 1936) for Philadelphia *v.* New York on 2 Mar 1962. The most in a college game is 113 points by Clarence 'Bevo' Francis, for Rio Grande College, Ohio *v.* Hillsdale at Jackson, Ohio on 2 Feb 1954. The record score by a woman is 156 points by Marie Boyd (now Eichler) of Central HS, Lonaconing, Maryland, USA in a 163-3 defeat of Ursaline Academy, Cumberland on 25 Feb 1924.

The highest score by a British player is 124 points by Paul Ogden for St Albans School, Oldham (226) *v.* South Chadderton (82) on 9 Mar 1982. The highest individual score in an English National League (Div. One) or Cup match is 68 points by Bobby Cooper of London Central YMCA *v.* Exeter on 2 Mar 1979.

Most points

Wilt Chamberlain scored a career total of 31,419 points in NBA matches between 1960 and 1973. The record for the most points scored in a college career is (women): 4061, Pearl Moore of Francis Marion College, Florence, S. Carolina, 1975-9, (men): 4045 by Travis Grant for Kentucky State in 1969-72. In the English National League, Ian Day has scored 2783 points in 158 games, 1973-82.

Tallest players

The tallest player of all time is reputed to be Suleiman Ali Nash-nush (b. 1943) who played for the Libyan team in 1962 when measuring 2.45 m 8 ft. Aleksandr Sizonenko of Kuibyshev Stroitel and USSR is 2.39 m 7 ft 10 in tall. The tallest woman player is Iuliana Semenova (USSR) (b. 9 Mar 1952) at a reported 7 ft 2 in 2.18 m and weighing 281 lb 127.4 kg. The tallest British player has been the 7 ft 6 1/4 in 229 cm tall Christopher Greener (see p. 11) of London Latvians whose International debut for England was *v.* France on 17 Dec 1969.

Most accurate

The greatest goal shooting demonstration has been by Ted St Martin of Jacksonville, Florida, who, on 25 June 1977, scored 2036 consecutive free throws. In a 24-hr period, 31 May-1 June 1975 Fred L. Newman of San José, California, USA scored 12,874 baskets out of 13,116 throws (98.15 per cent accuracy).

Longest recorded goal

The longest recorded field goal in a match is a measured 89 ft 3 in 27.20 m by Les Henson for Virginia Tech *v.* Florida State on 21 Jan 1980. A British record of 75 ft 9 1/2 in 23.10 m is claimed by David Tarbatt (b. 23 Jan 1949) of Altofts Aces *v.* Harrogate Demons at Featherstone, West Yorkshire on 27 Jan 1980.

Largest ever gate

The Harlem Globetrotters (USA) played an exhibition in front of 75,000 in the Olympic Stadium, West Berlin, Germany, in 1951. The largest indoor basketball attendance was at the Superdome, New Orleans, Louisiana, USA, where admissions of 61,612 were recorded for both the semi-finals (27 Mar 1982) and final (29 Mar 1982, University of North Carolina *v.* Georgetown University) of the 1982 NCAA Division One tournament.

Marathon

The longest game is 90 hr 2 min by PE3 at Jordanhill College of Education, Glasgow on 23-27 Mar 1981.

BILLIARDS AND SNOOKER

Further information is available in the Guinness Book of Snooker by Clive Everton (£7.50 hard-back, 1981 or £5.95 limp-back, 1982) published by Guinness Superlatives Ltd.

BILLIARDS

Earliest mention

The earliest recorded mention of billiards was in France in 1429, while Louis XI, King of France 1461-83, is reported to have had a billiard table. The first recorded public billiards room in England was the Piazza, Covent Garden, London, in the early part of the 19th century. Rubber cushions were introduced in 1835 and slate beds in 1836.

Most titles *Professional*

The greatest number of world championship titles (instituted 1870) won by one player is eight by John Roberts, Jnr (1847-1919) (England) in 1870 (twice), 1871, 1875 (twice), 1877 and 1885 (twice). The greatest number of United Kingdom titles (instituted 1934) won by any player is seven (1934-39 and 1947) by Joe Davis, OBE (1901-78) (England), who also won four world titles (1928-30 and 1932). William F. Hoppe (USA) (1887-1959) won 51 'world' titles in the United States variant of the game between 1906 and 1952.

Most titles *Amateur*

The record for world amateur titles is four by Robert James Percival Marshall (Australia) (b. 10 Apr 1910) in 1936, 1938, 1951 and 1962. The greatest number of English Amateur Championships (instituted 1888) ever won is 13 by Norman Dagley (b. 27 June 1930) in 1965-66, 1970-75, 1978-82. The record number of women's titles is eight by Vera Selby (b. 13 Mar 1930) 1970-8.

Highest breaks

Tom Reece (1873-1953) made an unfinished break of 499,135, including 249,152 cradle cannons (two points each), in 85 hr 49 min against Joe Chapman at Burroughes' Hall, Soho Square, London, between 3 June and 6 July 1907. This was not recognized because press and public were not continuously present. The highest certified break made by the anchor cannon is 42,746 by William Cook (England) from 29 May to 7 June 1907. The official world record under the then baulk-line rule is 1784 by Joe Davis, OBE in the United Kingdom Championship on 29 May 1936. Walter Albert Lindrum OBE (Australia) (1898-1960) made an official break of 4137 in 2 hr 55 min against Joe Davis at Thurston's on 19-20 Jan. 1932, before the baulk-line rule was in force. Davis has an unofficial personal best of 2502 (mostly pendulum cannons) in a match against Tom Newman (1894-1943) (England) in Manchester in 1930. The highest break recorded in amateur competition is 1149 by Michael Ferreira (India) at Calcutta, India on 15 Dec 1978, but a rule amendment which now permits only three consecutive pot reds from its spot instead of five has reduced the size of breaks. The record under current rules is 630 by Michael Ferreira at New Delhi on 22 Nov 1981.

Fastest century

Walter Lindrum, OBE of Australia made an unofficial 100 break in 27.5 sec in Australia on 10 Oct 1952. His official record is 100 in 46.0 sec set in Sydney in 1941.

3 CUSHION

This pocketless variation dates back to 1878. The world governing body, the *Union Mondiale de Billiard* (UMB) was formed in 1928. The most successful exponent spanning the pre and post international era from 1906 to 1952 was Willie Hoppe who won 51 billiards championships in all forms. Most UMB titles have been won by Raymond Ceulemans (Belgium) (b. 1937) with 16 (1963-6, 1968-73, 1975-80), with a peak average of 1.679 in 1978.

SNOOKER

Origins

Research shows that snooker was originated by Colonel Sir Neville Francis Fitzgerald Chamberlain, KCB, KCVO (1856-1944) as a hybrid of 'black pool', 'pyramids' and billiards, in Jubbulpore, India in 1875. It did not reach England until 1885, where the modern scoring system was adopted in 1891. Championships were not instituted until 1916. The World Professional Championship was instituted in 1927.

SPORTS, GAMES AND PASTIMES



Left to right: Sam Ellis, referee Bob Kennovin, Tom McQuillan and observer Ben Watts. Ellis and McQuillan set a world snooker marathon record at Parkhurst Prison Officers Club. (Dave Rainer)

Most titles World

The world professional title (inst 1927) was won a record 15 times by Joe Davis OBE (1901–78), 1927–40 and 1946. The most wins in the amateur championships (inst 1963) have been two by Gary Owen (England) in 1963 and 1966, and Ray Edmonds (England) 1972 and 1974.

Most titles Women

Maureen Baynton (née Barrett) won a record eight women's amateur championships between 1954 and 1968, as well as seven at billiards.

World Championships Youngest

The youngest player to win a world title is Jimmy White (GB) (b. 2 May 1962) who was 18 yr 191 days when he won the World Amateur Snooker championship at Launceston, Tasmania, Australia on 9 Nov 1980.

Highest breaks

It is possible in a combination of highly unlikely circumstances to score 155. Alex Higgins (b. 18 Mar 1949) (N. Ireland) became the first player ever to make a '16 red' clearance with a break of 146 at Leicester YMCA, Leicester, England in 1976. The official world record break (commonly referred to as a maximum) is 147 set by Joe Davis, OBE (1901–78) against Willie Smith at Leicester Square Hall, London on 22 Jan 1955, and by Rex Williams (b. 30 July 1933) (GB) against Manuel Francisco at Cape Town, South Africa, on 22 Dec 1965. A break of 147 by Steve Davis (b. 22 Aug 1957) against John Spencer at Oldham on 11 Jan 1982 awaits ratification. Over 150 other 'perfect' frames have been achieved under less rigorous conditions. The only other maximum compiled in a major tournament was by John Spencer at Slough, Berks, on 13 Jan 1979. The first man to compile a 147 break was E. J. 'Murt' O'Donoghue (b. New Zealand, 1901) in Griffiths, NSW, Australia, on 26 Sept 1934.

The official world amateur record break is 140 set by Joe Johnson (b. 29 July 1952) (England) in the TUC Club, Middlesbrough, Cleveland in 1978. David Taylor (b. 9 July 1943) made three consecutive frame clearances of 130, 140, and 139 (total 409) at Minehead, Somerset, on 1 June 1978. Jim Meadowcroft (b. 15 Dec 1946) made four consecutive frame clearances of 105, 115, 117 and 125 at Connaught Leisure Centre, Worthing on 27 Jan 1982.

Marathon

The snooker endurance record is 141 hr 2 min by Sam Ellis and Tom McQuillan at Parkhurst Prison Officers Club, Newport, I.W. on 19–25 Apr 1982.

POOL

Pool or championship pocket billiards with numbered balls began to become standardised c. 1890. The greatest exponents were Ralph Greenleaf (USA) (1899–1950) who won the 'world'

Billiards and Snooker/Board Games

professional title 19 times (1919–37) and William Massey (USA) (b. 27 June 1913) who dominated the game from 1940 to 1957.

The longest consecutive run in an American straight pool match is 625 balls by Michael Eufemia at Logan's Billiard Academy, Brooklyn, NY, on 2 Feb 1960. The greatest number of balls pocketed in 24 hr is 13,437 by Patrick Young at the Lord Sneyley, Plaistow, London on 20–21 July 1981.

Marathon

The longest game is 218 hr 30 min by Lance Deek and David Williams at Bogey's Club, Cardiff on 19–28 June 1981.

BAR BILLIARDS

Highest scoring rate

The record scoring rate in a league game has been 24,340 in 17 min by John Stevens at the Amphill Hotel, Freemantle, Southampton, Hampshire on 25 Jan 1979.

24 hours

The highest bar billiards score in 24 hr by a team of five is 1,383,870 at The Magpie, Goring-on-Thames, Berkshire on 31 May 1981.

BOARD GAMES

BACKGAMMON

Forerunners of the game have been traced back to a dice and board game found in excavations at Ur, dated to 3000 BC. Later the Romans played a game remarkably similar to the modern one. The name 'Backgammon' is variously ascribed to Welsh "little battle", or Saxon "back game". Modern variations include the American Acey Deucey.

At present there are no world championships held, but a points rating system may soon be introduced internationally, thereby enabling players to be ranked.

Marathon

Dick Newcomb and Greg Peterson of Rockford, Illinois, played backgammon for 151 hr 11 min on 30 June–6 July 1978.

CHESS

Origins

The game originated in ancient India under the name Chaturanga (literally 'four-corps'—an army game). The name chess derived from the Persian word *shah* (a king or ruler). The earliest reference is from the Middle Persian Karnamak (c. AD 590–628), though in December 1972, two ivory chessmen were found in the Uzbek Soviet Republic dateable to AD 200. It reached Britain in c. 1255. The *Fédération Internationale des Echecs* was established in 1924. There were an estimated 7,000,000 competitive players in the USSR in 1973.

Most World titles

World champions have been generally recognised since 1886. The longest undisputed tenure was 27 years by Dr Emanuel Lasker (1868–1941) of Germany, from 1894 to 1921. The women's world championship was held by Vera Menchik Stevenson (1906–44) (USSR, later GB) from 1927 till her death, and was successfully defended a record seven times. Nona Gaprindashvili (USSR) (b. 3 May 1941) held the title from 1962 to 1978 and defended successfully four times. Robert J. 'Bobby' Fischer (b. Chicago, Illinois, USA, 9 Mar 1943) is reckoned on the officially adopted Elo System to be the greatest Grand Master of all-time with a 2785 rating. The USSR has won the men's team title a record 13 times and the women's title eight times.

Youngest and Oldest

The youngest World champion was Mikhail Nekhemovich Tal (USSR) (b. 9 Nov 1936) when he took the title on 7 May 1958 aged 23 yr 180 days. The oldest was Wilhelm Steinitz (1836–1900) who was 58 yr old when he lost his title to Lasker in 1894.

Most British titles

Most British titles have been won by Dr Jonathan Penrose, OBE

(b. 7 Oct 1933) of East Finchley, London with ten titles in 1958–63, 1966–9. Rowena Mary Bruce (*née* Dew) (b. 15 May 1919) of Plymouth, Devon won 11 titles between 1937 and 1969. The first British player to attain official International Grand Master status was Anthony Miles (b. 23 Apr 1955), on 24 Feb 1976. Miles reached a rating of 2590 on the Elo system in 1981, but the highest rated British player in 1982 is John Nunn (b. 25 Apr 1955) at 2590.

Least games lost by a world champion

José Raúl Capablanca (Cuba) (1888–1942) lost only 34 games in his adult career, 1909–39. He was unbeaten from 10 Feb 1916 to 21 Mar 1924 and was world champion 1921–7.

Most opponents

Vlastimil Hort (b. 12 Jan 1944) (Czechoslovakia), in Seltjarnes, Iceland on 23–24 Apr 1977, played 550 opponents including a record 201 simultaneously. He only lost ten games. The record for most consecutive games played is held by Branimir Brebrich (Canada) who played 575 games (533 wins, 27 draws, 15 losses) in Edmonton, Alberta on 27–28 Jan 1978, during 28 hr of play. Georges Koltanowski (Belgium, now of USA) (b. 17 Sept 1903) tackled 56 opponents 'blindfold', won 50, and drew six in 9 hr 45 min at the Fairmont Hotel, San Francisco, California, USA, on 13 Dec 1960.

Slowest and longest games

The slowest reported move (before modern rules) in an official event is reputed to have been played by Louis Paulsen (Germany) (1833–91) against Paul Charles Morphy (USA) (1837–84) on 29 Oct 1857. The game ended in a draw on move 56 after 15 hours of play of which Paulsen used most of the allotted time. Grandmaster Friedrich Sämisch (1896–1975) (Germany) ran out of the allotted time (2 hr 30 min for 45 moves) after only 12 moves, in Prague, Czechoslovakia, in 1938.

The Master game with most moves on record was when Yedael Stepak (Israel) (b. 21 Aug 1940) beat Yaakov Mashian (Iran, later Israel) (b. 17 Dec 1943) in 193 moves in Tel Aviv, Israel on 23 Mar–16 Apr 1980. The total playing time was a record 24 hr 30 min.

Marathon

The longest recorded session is one of 168 hr by Stan Zygmunt and Ilya Schwartzman at the 45th Avenue Shopping Centre, Munster, Indiana, USA on 28 Dec 1979–4 Jan 1980.

DRAUGHTS

Origins

Draughts, known as checkers in North America, has origins earlier than chess. It was played in Egypt in the second millennium BC. The earliest book on the game was by Antonio Torquemada of Valencia, Spain in 1547. There have been three US v. Great Britain international matches (crossboard) 1905, 1927 and 1973, two won by the United States and one by Great Britain.

Walter Hellman (USA) (1916–75) won a record six world championships, in 1948–67.

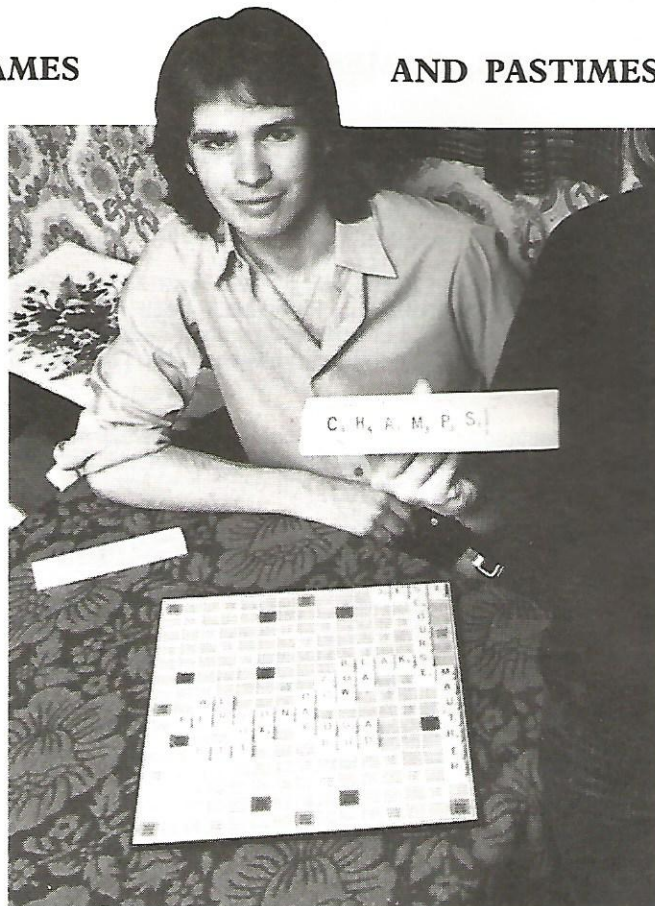
The British Championship (biennial) was inaugurated in 1926. The only man to win five titles has been Jim Marshall (Fife) in 1948, 1950, 1952, 1954 and 1966. Melvin Pomeroy (US), was internationally undefeated from 1914 until his death in 1933.

Most opponents

Newell W. Banks (b. Detroit, USA, 10 Oct 1887) played 140 games simultaneously, winning 133 and drawing seven, in Chicago, Illinois in 1933. His playing time was 145 min, so averaging about one move per sec. In 1947 he played blindfold for 4 hr per day for 45 consecutive days, winning 1331 games, drawing 54 and losing only two, while playing six games at a time. Patrick Moore, OBE (b. 4 Mar 1923) played 149 games simultaneously, at Twickenham, Greater London on 30 May 1981, winning 118, losing 27 and drawing four.

Longest and shortest games

In competition the prescribed rate of play is not less than 30 moves per hour with the average game lasting about 90 min. In 1958 a match between Dr Marion Tinsley (US) and Derek Oldbury (GB) lasted 7 hr 30 min. The shortest possible game is one



Scrabble world record holders: top Allan Simmons, who set a highest league score (*Kentish Times*), below Marie Warrell (left) and Carol Brockie (right), who played the longest game.

of 20 moves composed by Alan M. Beckerson (b. 21 Feb 1938) (GB) on 2 Nov 1977.

MONOPOLY®

Origins

The patentee of Monopoly® the world's most popular proprietary board game of which Parker Brothers has sold in excess of 80,000,000 copies, was Charles Darrow (1889–1967). He invented the patented version of the game in 1933, while an unemployed heating engineer, using the street names of Atlantic City, New Jersey where he spent his vacations.

Marathon

The longest game by four players ratified by Parker Brothers is 408 hr by Peter Callon, Paul Taplin, John Cresswell and Lesley De Wahl of Shanklin, Isle of Wight on 5–22 Feb 1981.

SCRABBLE® Crossword Game

Origins

The crossword game was invented by Alfred M. Butts in 1931 and was developed, refined and trademarked as Scrabble® Crossword Game by James Brunot in 1948. He sold the North American rights to Selchow & Richter Company, New York, the European rights to J. W. Spears & Sons, London, and the Australian rights to Muffett Pty Ltd, Melbourne.

SPORTS, GAMES AND PASTIMES

Highest scores

The highest competitive league game score is 774 by Allan Simmons (GB) on 1 July 1981. His opponent scored 285. The highest competitive single turn score recorded is 380.

Most titles

British National Championships were instituted in 1971. Olive Behan, 1972 and 1975, and Philip Nelkon, 1978 and 1981, have both won twice. The highest score in the Championship has been 1626 (three games total) by Russell Byers in 1982.

Marathon

The longest Scrabble® Crossword Game is 129 hr 42 min by Marie Warrell and Carol Brockie at The Cock Inn, Sarat, Herts on 27 Aug-1 Sept 1981.

BOBSLEIGH & TOBOGGANING

BOBSLEDDING

Origins

The oldest known sledge is dated c. 6500 BC and came from Heinola, Finland. The first known bobsleigh race took place at Davos, Switzerland in 1889. The International Federation of Bobsleigh and Tobogganing was formed in 1923, followed by the International Bobsleigh Federation in 1957.

Most titles Olympic

The Olympic four-man bob title (inst. 1924) has been won four times by Switzerland (1924, 1936, 1956 and 1972). The USA (1932, 1936), Switzerland (1948, 1980), Italy (1956, 1968) and W. Germany (1952, 1972) have won the Olympic boblet (inst. 1932) event twice. The most gold medals won by an individual is three by Meinhard Nehmer (GDR) (b. 13 June 1941) and Bernhard Germeshausen (GDR) (b. 21 Aug 1951) in the 1976 two-man, 1976 and 1980 four-man events. The most medals won is six (two gold, two silver, two bronze) by Eugenio Monti (Italy) (b. 23 Jan 1928) from 1956 to 1968. The only British victory has been the two-man bob in 1964 by Hon. Robin Thomas Valerian Dixon (b. 21 Apr 1935) and Anthony James Dillon Nash (b. 18 Mar 1936).

Most titles World

The world four-man bob title has been won 13 times by Switzerland (1924, 1936, 1939, 1947, 1954-7, 1971-3, 1975 and 1982). Italy won the two-man title 14 times (1954, 1956-63, 1966, 1968-9, 1971 and 1975). Eugenio Monti has been a member of eleven world championship crews, eight two-man and three four-man.

TOBOGGANING

The word toboggan comes from the Micmac American Indian word *tobaakan*. The St Moritz Tobogganing Club, Switzerland, founded in 1887 is the oldest toboggan club in the world. It is unique in being the home of the Cresta Run, which dates from 1884, and for the introduction of the one-man racing toboggan skeleton. The course is 3977 ft 1212.25 m long with a drop of 514 ft 157 m and the record is 53.24 sec (av. 50.92 mph 81.96 km/h) by Poldi Berchtold of Switzerland on 9 Feb 1975. The record from the Junction (2913 ft 888 m) is 42.96 sec, by Berchtold on 22 Feb 1975. Speeds of 90 mph 145 km/h are occasionally attained.

The greatest number of wins in the Grand National (inst. 1885) is eight by the 1948 Olympic champion Nino Bibbia (Italy) (b. 9 Sept 1924) in 1960-4, 1966, 1968 and 1973. The greatest number of wins in the Curzon Cup (inst. 1910) is eight by Bibbia in 1950, 1957-8, 1960, 1962-4, and 1969, who hence won the double in 1960 and 1962-4.

LUGEING

In lugeing the rider adopts a sitting, as opposed to a prone, position. Official international competition began at Klosters, Switzerland, in 1881. The first European championships were at Reichenberg, E. Germany, in 1914 and the first world championships at Oslo, Norway, in 1953. The International Luge Federation was formed in 1957. Lugeing became an Olympic sport in 1964.

Board Games/Bobsleigh and Tobogganing/Bowling

Fastest speed

The highest recorded, photo-timed, speed is 137.4 km/h 85.38 mph by Asle Strand (Norway) at Tandådalen, Luster, Sälén, Sweden on 1 May 1982.

Most titles World and Olympic

The most successful rider in the world championships is Thomas Köhler (E. Germany) (b. 25 June 1940), who won the single-seater title in 1962, 1964 (Olympic), 1966 and 1967 and shared the two-seater title in 1967 and 1968 (Olympic). In the women's championship Margit Schumann (E. Germany) (b. 1 Sept 1952) has won five times, in 1973-5, 1976 (Olympic) and 1977.

BOWLING (TENPIN)

Origins

The ancient German game of nine-pins (*Heidenwerfen*—known down pagans) was exported to the United States in the early 19th century. In about 1845 the Connecticut and New Haven State Legislatures prohibited the game so a tenth pin was added to evade the ban; but there is some evidence of ten pins being used in Suffolk about 300 years ago. The first body to standardise rules was the American Bowling Congress (ABC), established in New York on 9 Sept 1895.

In the United States there were 8591 bowling establishments with 154,412 bowling lanes and 65,000,000 bowlers in 1980. The world's largest bowling centre (now closed) was the Tokyo World Lanes Centre, Japan with 252 lanes. Currently the largest centre is the Willow Grove Park Lanes, Philadelphia, USA which has 116 lanes. The largest in Europe is the Nottingham Bowl at Nottingham, England, where the game was introduced in 1960, with 48 lanes on two floors (24 on each floor).

World championships

The world (Fédération Internationale des Quilleurs) championships were instituted in 1954. The highest pinfall in the individual men's event is 5963 (in 28 games) by Ed Luther (USA) Milwaukee, Wisconsin, on 28 Aug 1971. In the women's championships (instituted 1963) the record is 4720 pins (in 24 games) by Bong Coo (Philippines) at Manila, Philippines in Dec 1970.

Highest scores World

The highest individual score for three sanctioned games (possible 900) is 886 by Albert 'Allie' Brandt of Lockport, New York, USA, on 25 Oct 1939. The record by a woman is 853 by Sharon Langford at Clearwater, Florida, USA, on 19 Feb 1982. The record for consecutive strikes in sanctioned match play is 35 by John Pezzin (b. 1930) at Toledo, Ohio, USA on 4 Mar 1976. The highest number of sanctioned 300 games is 27 (till 1980) by Elmer Mesger of Sullivan, Missouri, USA. The maximum 900 in a three-game series has been recorded four times in unsanctioned games—by Leo Bentley at Lorain, Ohio, USA, on 26 Mar 1940, by Joe Sargent at Rochester, New York State, USA, in 1934, by Jim Margie in Philadelphia, Pennsylvania, USA, on 4 Feb 1940 and by Bob Brown at Roseville Bowl, California, USA on 12 Apr 1980. Such series must have consisted of 36 consecutive strikes (i.e. all pins down with one ball).

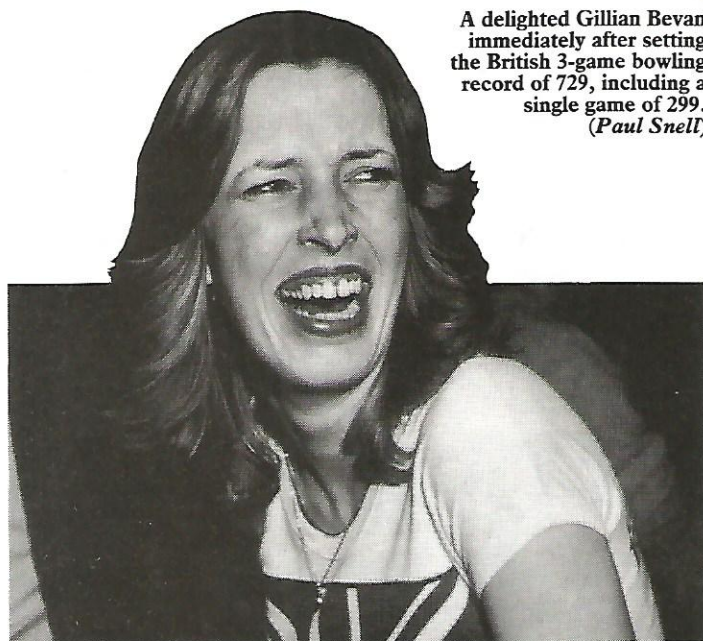
The highest average for a season attained in sanctioned competition is 240 by John Johns, of Canton, Ohio, USA for 99 games in 1978-9.

Highest scores Great Britain

The United Kingdom record for a three-game series is 785 by Daniel John Smith (b. 15 June 1955) at the Charrington Bowl, Tolworth, Surrey on 18 Dec 1980. The record score for a single game is 300, first achieved by Albert Kirkham (b. 1931) of Burnham, Staffordshire, on 5 Dec 1965, which has since been equalled on several occasions. The best by a woman is 299, first achieved by Carole Cuthbert at the Airport Bowl, Hayes, Middlesex on 16 Mar 1972. The three-game series record for a woman player is 729 by Gillian Bevan (b. 5 Nov 1952) at the Airport Bowl, Hayes, Middlesex on 8 Apr 1982.

Highest earnings

The first bowler to reach career earnings of \$1 million was



A delighted Gillian Bevan immediately after setting the British 3-game bowling record of 729, including a single game of 299. (Paul Snell)

Professional Bowlers Association (PBA) competition was Earl Anthony, who achieved this when he won a record fifth PBA US national championship on 27 Feb 1982.

Marathon

John Francis Damiani bowled for 155 hr 4 min on 15–21 Aug 1980 at the Lancaster Lanes, New York, USA.

SKITTLES

24 Hours

Eight players from Torquay United Social Club Blues knocked down 77,904 West Country skittles on 6–7 June 1980 at the Belgrave Hotel, Torquay, Devon. The highest hood skittle score in 24 hr is 107,487 pins by 12 players from the Plume of Feathers, Daventry, Northamptonshire, on 19–20 Mar 1976. The highest table skittle score in 24 hr is 90,446 skittles by 12 players at the Finney Gardens Hotel, Hanley, Staffs on 27–28 Dec 1980.

Marathon

The duration record for knocking down skittles (9-pins) is 168 hr by six players from the Gloucester and District Irish Society at Gloucester on 15–22 Aug 1981.

BOWLS

OUTDOOR

Origins

Bowls can be traced back to at least the 13th century in England. The Southampton Town Bowling was formed in 1299. A green dating back to 1294 is claimed by the Chesterfield Bowling Club. After falling into disrepute, the game was rescued by the bowlers of Scotland who, headed by William W. Mitchell (1803–84), framed the modern rules in 1848–9.

Most titles *World*

The only man to win two singles titles is David John Bryant CBE (b. 27 Oct 1931) (England) in 1966 and 1980. Australia has won the doubles event on two occasions, 1966 and 1980. At Johannesburg, South Africa, in February 1976, the South African team achieved an unprecedented clean sweep of all four titles and the team competition (Leonard Trophy).

Most titles *International Championship*

In the annual International Championships (instituted 1903) Scotland have won a record 34 times including 11 consecutive wins from 1965 to 1975.

Most titles *English*

The record number of English Bowls Association (founded 8 June 1903) championships is 15 won or shared by David Bryant,

CBE, including six singles, three pairs (1965, 1969, 1974), and two triples (1966, 1977), who uniquely was involved in all four titles with four rinks or fours championships (1957, 1968, 1969 and 1971). He has also won six British Isles titles (four singles, one pairs, one fours) in the period 1957–74.

Highest score

The highest score achieved in an international bowls match is the 63–1 victory by Swaziland v Japan during the World Championships at Melbourne, Australia on 16 Jan 1980.

Most eights

Freda Ehlers and Linda Bertram uniquely scored three consecutive eights in the Southern Transvaal pairs event at Johannesburg, South Africa on 30 Jan 1978.

International appearances

The greatest number of international appearances outdoors by any bowler is 78 reached by Syd Thompson (b. 29 Aug 1912) for Ireland 1947–73. He also has had 45 indoor caps. The youngest bowler to represent England was Gerard Anthony Smyth (b. 29 Feb 1960) at 20 yr 196 days on 13 July 1981. The youngest ever EBA champion was David J. Cutler (b. 1 Aug 1954) in 1979. Norman Thomas Amos (b. 20 Sept 1958) represented Scotland aged 20 years 299 days in Wales on 16 July 1979.

Marathon

The longest game is 82 hr 1 min by two fours teams from the Sunbury Bowling Club, Victoria, Australia on 23–26 Jan 1982.

INDOOR

The English Indoor Bowling Association became an autonomous body in 1971. Prior to that it was part of the English Bowling Association.

Most titles

The four-corner international championship was first held in 1936. England have won most titles with 18 wins. The National Singles title (inst. 1960) has been won most often by David Bryant, CBE with eight wins (1960, 1966, 1971–3, 1975, 1978–9). David Bryant has won the World Indoor Championship (inst 1979) three times, 1979–81.

Highest score

The highest score in a British International match is 52 by Scotland v. Wales (3) at Teeside in March 1972.

Marathon

Two fours teams from the Tauranga District Indoor Bowling Association, NZ, played for 73 hr 30 min on 13–16 Apr 1979.

BOXING

Earliest references

Boxing with gloves was depicted on a fresco from the Isle of Thera, Greece which has been dated 1520 BC. The earliest prize-ring code of rules was formulated in England on 16 Aug 1743 by the champion pugilist Jack Broughton (1704–89), who reigned from 1734 to 1750. Boxing, which had, in 1867, come under the Queensberry Rules formulated for John Sholto Douglas, 9th Marquess of Queensberry (1844–1900) was not established as a legal sport in Britain until after the ruling, *R. v. Roberts and Others*, of Mr Justice Grantham, following the death of Billy Smith (Murray Livingstone) due to a fight on 24 Apr 1901.

Longest fights

The longest recorded fight with gloves was between Andy Bowen of New Orleans (k. 1894) and Jack Burke in New Orleans, Louisiana, USA, on 6–7 Apr 1893. The fight lasted 110 rounds and 7 hr 19 min (9.15 p.m.–4.34 a.m.), and was declared no contest (later changed to a draw) when both men were unable to continue. The longest bare knuckle fight was 6 hr 15 min between James Kelly and Jack Smith at Fieri Creek, Dalesford, Victoria, Australia on 3 Dec 1855. The longest bare knuckle fight in Britain was 6 hr 3 min (185 rounds) between Bill Hayes and Mike Madden at Edenbridge, Kent, on 17 July 1849. The greatest number of rounds was 276 in 4 hr 30 min when Jack Jones beat Patsy Tunney in Cheshire in 1825.



Shortest fights

There is a distinction between the quickest knock-out and the shortest fight. A knock-out in 10½ sec (including a 10 sec count) occurred on 26 Sept 1946, when Al Couture struck Ralph Walton while the latter was adjusting a gum shield in his corner at Lewiston, Maine, USA. If the time was accurately taken it is clear that Couture must have been more than half-way across the ring from his own corner at the opening bell. The shortest fight on record appears to be one in a Golden Gloves tournament at Minneapolis, Minnesota, USA, on 4 Nov 1947 when Mike Collins floored Pat Brownson with the first punch and the contest was stopped, without a count, 4 sec after the bell.

The fastest officially timed knock-out in British boxing is 11 sec (including a doubtless fast 10 sec count) when Jack Cain beat Harry Deamer, both of Notting Hill, London at the National Sporting Club on 20 Feb 1922.

The shortest world heavyweight title fight occurred when Tommy Burns (b. Noah Brusso) (1881–1955) of Canada knocked out Jem Roche in 1 min 28 sec in Dublin, Ireland, on 17 Mar 1908. The duration of the fight between Cassius Clay (b. Louisville, Kentucky, USA, 17 Jan 1942 who later took the name Muhammad Ali Haj) and Charles 'Sonny' Liston (1932–70) at Lewiston, Maine, USA, on 25 May 1965 was 1 min 52 sec (including the count) as timed from the video tape recordings, despite a ringside announcement giving a time of 1 min. The shortest world title fight was when Al McCoy knocked out George Chip in 45 sec for the middleweight crown in New York on 7 Apr 1914. The shortest ever British title fight was one of 40 sec (including the count), when Dave Charnley knocked out David 'Darkie' Hughes in a lightweight championship defence in Nottingham on 20 Nov 1961.

Most British titles

The most defences of a British heavyweight title is 14 by 'Bombardier' Billy Wells (1889–1967) from 1911 to 1919. The only British boxer to win three Lonsdale Belts outright has been Henry William Cooper, OBE (b. Camberwell, London, 3 May 1894), heavyweight champion (1959–69, 1970–1). He retired after losing to Joe Bugner (b. Hungary, 13 Mar 1950), having

Sugar Ray Leonard, in action against Thomas Hearns, when he won a record purse. In 1982 a detached retina in his left eye caused doubts about Leonard's future boxing career. (*All-Sport*)

held the British heavyweight title from 12 Jan 1959 to 28 May 1969 and from 24 Mar 1970 to 16 Mar 1971.

Tallest

The tallest boxer to fight professionally was Gogea Mitu (b. 1914) of Romania in 1935. He was 7 ft 4 in 223 cm and weighed 23 st 5 lb (327 lb) 148 kg. John Rankin, who won a fight in New Orleans, Louisiana, USA, in November 1967, was reputedly also 7 ft 4 in 223 cm.

Longest career

The heavyweight Jem Mace (GB), known as 'the gypsy' (1831–1910), had a career lasting 35 years from 1855 to 1890, but there were several years in which he had only one fight. Bobby Dobbs (USA) (1858–1930) is reported to have had a 39 year career from 1875 to 1914. Walter Edgerton, the 'Kentucky Rosebud', knocked out John Henry Johnson aged 45 in four rounds at the Broadway AC, New York City, USA, on 4 Feb 1916, when aged 63.

Most fights

The greatest recorded number of fights in a career is 1024 by Bobby Dobbs (USA) (see above). Abraham Hollandersky, alias Abe the Newsboy (USA) is reputed to have had up to 1309 fights from 1905 to 1918, but many of them were exhibition bouts.

Most fights without loss

Hal Bagwell (b. 18 Dec 1818), a lightweight, of Gloucester, was reputedly undefeated in 183 consecutive fights, of which only five were draws, between 15 Aug 1938 and 29 Nov 1948. His record of fights in the war-time period (1939–46), is however very sketchy. He never contested a British title. Of boxers with complete records Packey McFarland (USA) (1888–1936) had 97 fights in 1905–15 without a defeat. Pedro Carrasco (b. Huelva, Spain, 7 Nov 1943) won 83 consecutive fights between April 1964 and Nov 1970, and in all had 90 wins and one draw.

Most knock-outs

The greatest number of finishes classed by the rules prevailing

as 'knock-outs' in a career (1936-63) is 143 by Archie Moore (b. Archibald Lee Wright, Benoit, Mississippi, USA, 13 Dec 1913 or 1916). The record for consecutive KO's is 44, set by Lamar Clark of Utah at Las Vegas, Nevada, USA, on 11 Jan 1960. He knocked out six in one night (five in the first round) at Bingham, Utah, on 1 Dec 1958.

Largest purse

The greatest purse received is a reported \$11,000,000 by Sugar Ray Leonard (USA) (b. 17 May 1956) when he beat Thomas Hearns (USA) for the undisputed world welterweight title at Las Vegas on 16 Sept 1981.

Highest bare knuckle stake

The largest stake ever fought for in this era was £4500 in the 27-round fight when Jack Cooper beat Wolf Bendoff at Port Elizabeth, South Africa on 26 July 1889.

Highest earnings in career

The largest fortune ever made in a fighting career is an estimated \$69 million (including exhibitions) amassed by Muhammad Ali from October 1960 to December 1981 in 61 fights comprising 549 rounds.

Attendances Highest

The greatest paid attendance at any boxing fight has been 120,757 (with a ringside price of \$27.50) for the Tunney v. Dempsey world heavyweight title fight at the Sesquicentennial Stadium, Philadelphia, Pennsylvania, USA, on 23 Sept 1926. The indoor record is 63,350 at the Ali v. Leon Spinks fight in the Superdome, New Orleans, Louisiana, on 15 Sept 1978. The British attendance record is 82,000 at the Len Harvey v. Jock McAvoy fight at White City, London, on 10 July 1939.

The highest non-paying attendance is 135,132 at the Tony Zale v. Billy Pryor fight at Juneau Park, Milwaukee, Wisconsin, USA, on 18 Aug 1941.

Attendances Lowest

The smallest attendance at a world heavyweight title fight was 2434 at the Clay v. Liston fight at Lewiston, Maine, USA, on 25 May 1965.

WORLD HEAVYWEIGHT CHAMPIONS

Earliest title fight

The first world heavyweight title fight, with gloves and 3 min rounds, was that between John Lawrence Sullivan (1858-1918) and 'Gentleman' James John Corbett (1866-1933) in New Orleans, Louisiana, USA, on 7 Sept 1892. Corbett won in 21 rounds.

Longest and shortest reigns

The longest reign of any world heavyweight champion is 11 years 8 months and 7 days by Joe Louis (b. Joseph Louis Barrow, 1914-81), from 22 June 1937, when he knocked out James Joseph Braddock in the eighth round at Chicago, Illinois, USA, until announcing his retirement on 1 Mar 1949. During his reign Louis made a record 25 defences of his title. The shortest reign was by Leon Spinks (USA) (b. 11 July 1953) for 212 days from 15 Feb to 15 Sept 1978. Ken Norton (USA) (b. 6 Aug 1945) was recognised by the WBC as champion for 83 days from 18 Mar-9 June 1978.

Most recaptures

Muhammad Ali Haj is the only man to regain the heavyweight championship twice. Ali first won the title on 25 Feb 1964 defeating Sonny Liston. He defeated George Foreman on 30 Oct 1974 having been stripped of the title by the world boxing authorities on 28 Apr 1967. He won the WBA title from Leon Spinks on 15 Sept 1978 having previously lost to him on 15 Feb 1978.

Undefeated

Rocky Marciano (b. Rocco Francis Marchegiano) (1923-69) is the only world heavyweight champion to have been undefeated during his entire professional career (1947-56). He won all his 49 fights, 43 by knockouts or stoppages.

Oldest and Youngest

The oldest man to win the heavyweight crown was Jersey Joe Walcott (b. Arnold Raymond Cream, 31 Jan 1914 at Merchantville, New Jersey, USA) who knocked out Ezzard Charles (1921-75) on 18 July 1951 in Pittsburgh, Pennsylvania, when aged 37 years 168 days. Walcott was the oldest holder at 38 years 7 months 23 days, losing his title to Rocky Marciano (1923-69) on 23 Sept 1952. The youngest age at which the world title has been won is 21 years 331 days by Floyd Patterson (b. Waco, North Carolina, 4 Jan 1935), when he won the vacant title by beating Archie Moore in Chicago, Illinois, USA, on 30 Nov 1956.

Heaviest and lightest

The heaviest world champion was Primo Carnera of Italy, the 'Ambling Alp', who won the title from Jack Sharkey in six rounds in New York City, NY, USA, on 29 June 1933. He scaled 267 lb 121 kg for this fight but his peak weight was 270 lb 122 kg. He had an expanded chest measurement of 53 in 134 cm, the longest reach at 85½ in 217 cm (finger tip to finger tip). The largest fists were those of Sonny Liston at 15 in 38 cm circumference. The lightest champion was Robert James 'Bob' Fitzsimmons (1863-1917), from Helston, Cornwall, who at a weight of 167 lb 75 kg, won the title by knocking out James Corbett in 14 rounds at Carson City, Nevada, USA, on 17 Mar 1897.

The greatest differential in a world title fight was 86 lb 39 kg between Carnera (270 lb 122 kg) and Tommy Loughran (184 lb 83 kg) of the USA, when the former won on points at Miami, Florida, USA, on 1 Mar 1934.

Tallest and shortest

The tallest world champion according to measurements by the Physical Education Director of the Hemingway Gymnasium, Harvard University, was Carnera at 6 ft 5.4 in 196.59 cm although he was widely reported and believed to be up to 6 ft 8½ in 204 cm. Jess Willard (1881-1968) who won the title in 1915, often stated to be 6 ft 6¼ in 199 cm was in fact 6 ft 5¼ in 196.21 cm. (Willard was the longest lived of heavyweight champions at 86 years 351 days). The shortest was Tommy Burns, world champion from 23 Feb 1906 to 26 Dec 1908, who stood 5 ft 7 in 170 cm and weighed 179 lb 81 kg.

WORLD CHAMPIONS (any weight)

Longest and shortest reign

Joe Louis's heavyweight duration record of 11 years 252 days stands for all divisions. The shortest reign has been 33 days by Tony Canzeroni (USA) (1908-59) who was Junior Welterweight champion from 21 May to 23 June 1933.

Youngest and oldest

The youngest age at which any world championship has been won is 17 years 176 days by Wilfred Benitez (b. New York, 12 Sept 1958) of Puerto Rico, who won the WBA light welterweight title in San Juan, PR, on 6 Mar 1976. The oldest world champion was Archie Moore who was recognised as a light heavyweight champion up to 10 Feb 1962 when his title was removed. He was then believed to be between 45 and 48. Bob Fitzsimmons had the longest career of any official world titleholder with over 32 years from 1882 to 1914. He won his last world title aged 40 years 183 days in San Francisco, California on 25 Nov 1903. He was an amateur from 1880 to 1882.

Longest fight

The longest world title fight (under Queensberry Rules) was that between the lightweights Joe Gans (1874-1910), of the USA, and Oscar Matthew 'Battling' Nelson (1882-1954), the 'Durable Dane', at Goldfield, Nevada, USA, on 3 Sept 1906. It was terminated in the 42nd round when Gans was declared the winner on a foul.

Most recaptures

The only boxer to win a world title five times at one weight is 'Sugar' Ray Robinson (b. Walker Smith, Jr, in Detroit, 3 May 1920) of the USA, who beat Carmen Basilio (USA) in the Chicago Stadium on 25 Mar 1958, to regain the world middleweight title for the fourth time. The other title wins were over Jake LaMotta (USA) in Chicago on 14 Feb 1951, Randolph Turpin

MOST ABA TITLES WON IN EACH CLASS

Class	Instituted	Wins	Name	Years
Light-Flyweight (7 st 8 lb 48 kg or under)	1971	3	Michael Abrams	1971-3
Flyweight (8 st 57 kg or under)	1920	5	Thomas Pardoe	1929-33
Bantamweight (8 st 7 lb 54 kg or under)	1884	4	William W. Allen	1911-12, 1914, 1919
Featherweight (9 st 57 kg or under)	1884	5	George R. Baker	1912-14, 1919, 1921
Lightweight (9 st 7 lb 60 kg or under)	1881	4	Matthew Wells	1904-7
		4	Frederick Grace	1909, 1913, 1919-20
Light-Welterweight (10 st 63.5 kg or under)	1951	2	David Stone	1956-7
		2	Robert Kane	1958-9
		2	L/Cpl. Brian Brazier	1961-2
		2	Richard McTaggart	1963, 1965
Welterweight (10 st 8 lb 67 kg or under)	1920	3	Nicky Gargano	1954-6
		3	Terry Waller	1970, 1973-4
Light-Middleweight (11 st 2 lb 71 kg or under)	1951	2	Bruce Wells	1953-4
		2	Bernard Foster	1952, 1955
		2	Stuart Pearson	1958-9
		2	Thomas Imrie	1966, 1969
		2	Robert Maxwell	1973-4
Middleweight (11 st 11 lb 75 kg or under)	1881	5	Reuben C. Warnes	1899, 1901, 1903, 1907, 1910
		5	Harry W. Mallin	1919-23
		5	Frederick Mallin	1928-32
Light-Heavyweight (12 st 10 lb 81 kg or under)	1920	4	Harry J. Mitchell	1922-5
Heavyweight (over 12 st 10 lb 81 kg)	1881	5	Frederick Parks	1899, 1901-2, 1905-6

(United Kingdom) in New York on 12 Sept 1951, Carl 'Bobo' Olson (USA) in Chicago on 9 Dec 1955, and Gene Fullmer (USA) in Chicago on 1 May 1957. The record number of title bouts in a career is 33 or 34, at bantam and featherweight, by George Dixon (1870-1909), *alias* 'Little Chocolate', of Canada, between 1890 and 1901.

Greatest weight span

The only man to hold world titles at three weights *simultaneously* was Henry 'Homicide Hank' Armstrong (b. 12 Dec 1912), now the Rev Henry Jackson, of the USA, at featherweight, light-weight and welterweight from August to December 1938.

Greatest 'tonnage'

The greatest 'tonnage' recorded in any fight is 700 lb 317 kg when Claude 'Humphrey' McBride (Oklahoma) 340 lb 154 kg knocked out Jimmy Black (Houston), who weighed 360 lb 163 kg in the third round at Oklahoma City on 1 June 1971. The greatest 'tonnage' in a world title fight was 488½ lb 221½ kg, when Carnera, then 259¼ lb 117½ kg fought Paolino Uzcudun 229½ lb 104 kg of Spain in Rome on 22 Oct 1933.

Smallest champion

The smallest man to win any world title has been Netnoi Vorasith (b. 22 Apr 1959) (Thailand), WBC light-flyweight champion from May to Sept 1978, at 1.50 m 4 ft 11 in tall. Jimmy Wilde (1892-1969) who held the flyweight title from 1916 to 1923 was reputed never to have fought above 108 lb 49 kg.

Most knock-downs in Title fights

Vic Toweel (South Africa) knocked down Danny O'Sullivan of London 14 times in ten rounds in their world bantamweight fight at Johannesburg on 2 Dec 1950, before the latter retired.

AMATEUR

Most Olympic titles

Only two boxers have won three Olympic gold medals: south-paw László Papp (b. 25 Mar 1926) (Hungary), middleweight 1948, light-middleweight 1952 and 1956; Teofilo Stevenson (b. 23 Mar 1952) (Cuba), heavyweight 1972, 1976 and 1980. The only man to win two titles in one celebration was Oliver L. Kirk (USA), who took both the bantam and featherweight titles in St Louis, Missouri, USA, in 1904, when the US won all the titles. In 1908 Great Britain won all the titles. Henry William 'Harry' Mallin (1892-1969) (GB) was in 1924 the first boxer ever to defend successfully an Olympic title in retaining the middleweight title.

Oldest gold medallist

Richard K. Gunn (1870-1961) (GB) won the Olympic featherweight gold medal on 27 Oct 1908 in London aged 38.

World Championships

Two boxers have won two world championships (inst. 1974): Teofilo Stevenson (Cuba), heavyweight 1974 and 1978 and Angel Herrera (b. 2 Aug 1952) (Cuba), featherweight 1978 and lightweight 1982.

Most titles Great Britain

The greatest number of ABA titles won by any boxer is six by Joseph Steers at middleweight and heavyweight between 1890 and 1893. Alex 'Bud' Watson (b. 27 May 1914) of Leith, Scotland won the Scottish heavyweight title in 1938, 1940 and the light-heavyweight championship 1937-9, 1943-5 and 1947, making ten in all. He also won the ABA light-heavyweight title in 1945 and 1947.

Longest span

The greatest span of ABA title-winning performances is three the heavyweight Hugh 'Pat' Floyd (b. 23 Aug 1910), who won in 1929 and gained his fourth title 17 years later in 1946.

BULLFIGHTING

Earliest

In the latter half of the second millennium BC bull leaping was practised in Crete. Bullfighting in Spain was first reported by the Romans in Baetica (Andalusia) in the third century BC. The first renowned professional *espada* was Francisco Romero de Ronda, in Andalusia, Spain, who introduced the *estoque* and the red muleta c. 1700. Spain now has some 190 active matadors. Since 1700, 42 major matadors have died in the ring.

Most successful matadors

The most successful matador measured by bulls killed was Lagartijo (1841-1900), born Rafael Molina, whose lifetime total was 4867. The longest career as a full matador was by Escalada (1922-75), born Antonio Mejías, from 1942 to 1974. Spanish law requires compulsory retirement at 55 years of age. In 1884 Romano set a record by killing 18 bulls in a day in Seville and in 1949 El Litri (Miguel Báez) set a Spanish record with 11 novilladas in a season.

Highest paid

The highest paid bullfighter in history was El Cordobés Manuel Benítez Pérez, probably on 4 May 1936, Palma de Mallorca (Spain), who became a sterling millionaire in 1965, when he fought 111 *corridos* up to 4 Oct of that year. In 1970 he received an estimated £750,000 for 121 fights. Paco Camino (b. 28 Feb 1941) has received up to 2,000,000 pesetas £16,000 for a *corrido*. He retired in 1977.

Largest stadiums

The world's largest bullfighting ring, the Plaza, Mexico City with a capacity of 48,000, was closed in March 1976. The largest of Spain's 312 bullrings is Las Ventas, Madrid with a capacity of 24,000.

CANOEING

Origins

The acknowledged pioneer of canoeing as a modern sport was John Macgregor (1825-92), a British barrister, in 1862. The Canoe Club was formed on 26 July 1866.

DOWNSTREAM CANOEING

River	Miles	Km	Name and Country
Rhine	714	1149	Sgt Charles Kavanagh (GB)
	714	1149	Four RAF canoeists (GB)
Murray-Darling	1980	3185	Six students of St Albert's College, UNE (Australia)
Mississippi	2552	4107	Steven Michael Eckelkamp and Kirk J. Millhone (USA)
Zaire (Congo)	2600	4185	John and Julie Batchelor (GB)
Amazon	3400	5470	Stephen Zsolnay Bezuk (US) (Kayak)
Mississippi-Missouri	3810	6132	Nicholas Francis (GB)
Nile	4000	6500	John Goddard (US), Jean Laporte and André Davy (France)

Route	Date	Duration
Chur, Switzerland to Willemstad, Neth.	13 Feb-2 Apr 1961	17½ days
Chur to Willemstad	28 Apr-7 May 1981	8 days 16 hr
Gunnedah, NSW to Lake Alexandrina, SA	Dec 1975	—
Lake Itasca, Minnesota to Gulf of Mexico	26 Aug-30 Sept 1980	35 days 11 hr 27 min
Moasampanga to Banana	8 May-12 Sept 1974	128 days
Atalaya to Ponta do Céu	21 June-4 Nov 1970	136 days
Three Forks, Montana to New Orleans, La.	13 July-25 Nov 1977	135 days
Kagera to the Delta	Nov 1953-July 1954	9 months

Most titles Olympic

Gert Fredriksson (b. 21 Nov 1919) of Sweden has won most Olympic gold medals with six in 1948, 1952, 1956 and 1960. The most by a woman is three by Ludmila Pinayeva (née Khvedosyuk) (b. 14 Jan 1936) (USSR), in 1964, 1968, and 1972. The most gold medals at one Games is three by Vladimir Parfenovich (b. 2 Dec 1958) (USSR) in 1980.

Most titles World

Yuri Lobanov (USSR) (b. 29 Sept 1952) has won a record 11 titles from 1972 to 1979, Ludmila Pinayeva (see above) added six other world titles to her three Olympic golds, from 1966 to 1973 for a female record. Alan Emus, who won the canoe sailing in 1961, 1965 and 1969, has been the most successful British canoeist.

Most titles British

The most British Open titles (instituted 1936) ever won is 32 by John Laurence Oliver (Lincoln Canoe Club) (b. 12 Jan 1943) from 1966 to 1976 including 12 individual events. David Mitchell (Chester S&CC) won eight British slalom titles in 1963-8, 1970-1.

Highest speed

The Olympic 1000 m best performance of 3 min 02.70 sec set in a heat by the USSR K4 at Moscow on 31 July 1980, represents an average speed of 12.24 mph 19.70 km/h. They achieved 13.14 mph 21.15 km/h over the first quarter of the course.

Longest journey

The longest journey ever made by canoe is one of 8880 miles 14 290 km from New Orleans by paddle and portage via the Mississippi River, Prescott, Minnesota, Grand Portage, Lake Superior and across Canada to the Bering Sea and Nome, Alaska by Jerry Robert Pushcar (b. 26 Nov 1949), accompanied only by a Samoyed dog, from 10 Jan 1975 to 12 Nov 1977.

The longest journey without portages or aid of any kind is one of 6102 miles 9820 km by Richard H. Grant and Ernest 'Moose' Lassy circumnavigating the eastern USA via Chicago, New Orleans, Miami, New York and the Great Lakes from 22 Sept 1930 to 15 Aug 1931.

Cross-Channel

The singles record across the English Channel is 3 hr 33 min 47 sec by Andrew William Dougall Samuel (b. 12 July 1937) of Glasgow, from Shakespeare Bay, Dover, to Wissant, France, on 5 Sept 1976. The doubles record is 2 hr 54 min 54 sec by Andrew Samuel and Sgt John David Anderson (RAF) (b. 18 Mar 1957) in a K2 Accord, from Shakespeare Bay, Dover to Cap Gris Nez, France on 22 Aug 1980.

The record for a double crossing is 12 hr 47 min in K1s by nine members of the Canoe Camping Club, GB, on 7 May 1976.

North Sea

On 4-5 June 1976 Derek Hutchinson, Tom Caskey and Dave Hellawell paddled K1s from Felixstowe, Suffolk to Ostend, Belgium, over 100 miles 160 km across open sea, in 31 hr.

Longest open sea voyage

Beatrice and John Dowd, Ken Beard and Steve Benson (Richard

Jerry Pushcar of Prior Lake, Minnesota paddled and carried his 17 ft 5.18 m, 78 lb 35 kg canoe 8880 miles from New Orleans to Nome, Alaska from 1975 to 1977. His Samoyed dog, Blizzard, was his only companion.



Gillett replaced him mid-journey) paddled 2170 miles 3491 km (of a total 2192 miles 3527 km) from Venezuela to Miami, Florida, USA, via the West Indies, 11 Aug 1977-29 Apr 1978 in two Klepper Aerius 20 kayaks.

Devizes-Westminster

The Senior Class record for the annual Challenge Cup race (instituted officially 1949) over 125 miles 201 km with 76 locks is 15 hr 34 min 12 sec by Brian R. Greenham and Timothy J. Cornish (Reading/Leighton Park/Richmond) to win the 1979 race.

Loch Ness

The fastest time for a K1 from Fort Augustus to Lochend (22.7 miles 36.5 km) is 3 hr 33 min 4 sec by Andrew Samuel (Trossachs Canoe and Boat Club) on 19 Oct 1975.

Highest altitude

In September 1976 Dr Michael Leslie Jones (1951-78) and Michael Hopkinson of the British Everest Canoe Expedition canoed down the River Dudh Kosi, Nepal from an altitude of 17,500 ft 5334 m.

Longest race

The longest regularly held canoe race in the USA is the Texas Water Safari (inst. 1963), 419 miles 674 km from San Marcos to Seadrift on the San Marcos and Guadalupe rivers. Butch Hodges and Robert Chatham set a record of 37 hr 18 min on 5-6 June 1976.

Eskimo rolls

The record for Eskimo rolls is 1000 in 53 min 5.7 sec by Terry Russell (b. 1956) at Swanley, Kent on 20 Apr 1980. A 'hand-rolling' record of 100 rolls in 3 min 23 sec was set in the Crystal Palace Pool, London on 25 Feb 1980 by John Bouteloup (21).

CARD GAMES

CONTRACT BRIDGE

Origins

Bridge (a corruption of Biritch) is thought to be either of Levantine origin, similar games having been played there in the early 1870s, or to have come from India.

Auction Bridge (highest bidder names trump) was invented c. 1902. The contract principle, present in several games (notably the French game *Plafond*, c. 1917) was introduced to Bridge by Harold S. Vanderbilt (USA) on 1 Nov 1925 during a Caribbean voyage aboard the SS *Finland*. It became a world-wide craze after the USA v. Great Britain challenge match between Romanian-born Ely Culbertson (1891–1955) and Lt-Col Walter Thomas More Buller (1887–1938) at Almack's Club, London, in September 1930. The USA won the 200-hand match by 4845 points.

Most World titles

The World Championship (Bermuda Bowl) has been won most often by Italy's Blue Team (*Squadra Azzurra*), 1957–9, 1961–3, 1965–7, 1969, 1973–5, whose team also won the Olympiad in 1964, 1968 and 1972. Giorgio Belladonna (b. 1923) was in all these winning teams.

Most master points

In the latest ranking list based on Master Points awarded by the World Bridge Federation, the leading male player in the world was Giorgio Belladonna a member of Italy's Blue Team with 1766½ points, followed by four more Italians. The leading Briton is Boris Schapiro (b. 22 Aug 1909) in 19th place with 353 points. The world's leading woman player is Dorothy Hayden Truscott (USA) with 322½ points, and third Rika 'Rixi' Markus, MBE (Austria, later GB) with 269 points.

Perfect deals

The mathematical odds against dealing 13 cards of one suit are 158,753,389,899 to 1, while the odds against receiving a 'perfect hand' consisting of all 13 spades are 635,013,559,596 to 1. The odds against each of the four players receiving a complete suit (a 'perfect deal') are 2,235,197,406,895,366,368,301,559,999 to 1.

Marathon

The longest recorded session is one of 180 hr by four students at Edinburgh University, Scotland on 21–28 Apr 1972.

CRIBBAGE

Origins

The invention of the game (once called Cribbage) is credited to the English dramatist Sir John Suckling (1609–42). It is

estimated that some ten million people play in the United States alone.

Rare hands

F. Art Skinner, of Alberta, Canada is reported to have had the maximum 29 point hands. Paul Nault of Athol, Mass, USA had two such hands within eight games in a tournament on 19 Dec 1977. At Blackpool, Lancashire, Derek Hearne dealt two hands of six clubs with the turn-up the remaining club on 8 Feb 1977. Bill Rogers of Burnaby, BC, Canada scored 29 in the same year.

Marathon

Geoff Lee, Ken Whyatt, Ray Charles and Paul Branson played for 120 hr at the RAOB Club, Mapperley, Nottingham on 1–3 Mar 1982.

WHIST

Origins

Whist, first referred to in 1529 (*as trump*), was the world's premier card game until 1930. The rules were standardised in 1744.

Highest score

The highest score claimed for 24 hands is 209 by Mrs E. Hester in the Shaldon Over 60 Club, Teignmouth, Devon on 5 Jan 1977 and by Mrs A. Lulham at Hurstmonceux, East Sussex, on 1 Jan 1978.

CRICKET

Origins

The earliest evidence of the game of cricket is from a drawing depicting two men playing with a bat and ball dated c. 1250. The game was played in Guildford, Surrey, at least as early as 1300. The earliest major match of which the full score survives was in which a team representing England (40 and 70) was beaten by Kent (53 and 58 for 9) by one wicket at the Artillery Ground, Finsbury, London, on 18 June 1744. Cricket was played in Australia as early as 1803. The first international match was played between Canada and USA in 1844. Fifteen years later those countries were host to the first English touring team. The first touring team to visit England was an Australian Aboriginal XI in 1868.

FIRST-CLASS CRICKET (1815 to 1982)

A substantial reduction in the English first-class cricket programme since 1968 has rendered many of the record aggregates for a season unassailable.

BATTING RECORDS—TEAMS

Highest innings World

The highest recorded innings by any team was one of 1107 runs.

CAVING—(see also pp. 68–69)

PROGRESSIVE WORLD DEPTH RECORDS

Compiled by Dr A. C. Waltham, Trent Polytechnic, Nottingham.

m	Cave	Country	Cavers	Date
403	Macocha	Czechoslovakia	J. Nagel <i>et al.</i>	1748
741	Grotta di Padriciano	Italy	A. Lindner <i>et al.</i>	1838
1079	Grotta di Trebiciano	Italy	A. Lindner <i>et al.</i>	1841
1309	Geldloch	Austria	—	1900
1574	Antro di Corchia	Italy	E. Fiorentino Club	1904
1878	Trou du Glaz	France	P. Chevalier <i>et al.</i>	1947
2418	Reseau de la Pierre St Martin	France	G. Lepineux <i>et al.</i>	July 1959
2882	Gouffre Berger	France	F. Petzl <i>et al.</i>	Sept 1959
3123	Gouffre Berger	France	L. Potié <i>et al.</i>	Aug 1960
3801	Gouffre Berger	France	F. Petzl <i>et al.</i>	July 1960
3716	Gouffre Berger	France	K. Pearce	Aug 1960
3842	Reseau de la Pierre St Martin	France	A.R.S.I.P.	Aug 1960
4038	Reseau de la Pierre St Martin	France	A.R.S.I.P.	Aug 1960
4407	Gouffre Jean Bernard	France	Groupe Vulcain	July 1961
4408	Gouffre Jean Bernard	France	P. Penez	Mar 1961
4773	Gouffre Jean Bernard	France	P. Penez & F. Vergier	Feb 1961
4886	Gouffre Jean Bernard	France	P. Penez & J. Fantoli	Feb 1961
4740	Gouffre Berger	France	Spéleo Club de Seine	July 1961
4826	Reseau de la Pierre St Martin	France	P. Courbon <i>et al.</i>	Sept 1961
4407	Gouffre Jean Bernard	France	A. Ciezewski <i>et al.</i>	Feb 1961

N.B. The Gouffre Jean Bernard and the Reseau de la Pierre St Martin have both been explored via multiple entrances. The Jean Bernard has never been entirely descended, and the Pierre St Martin was only completely descended in one visit in 1978; consequently after August 1963 the 'sporting' records for the greatest descent into a cave should read:

Cricket

by Victoria against New South Wales in an Australian Sheffield Shield match at Melbourne on 27–28 Dec 1926.

Highest innings England

The highest innings made in England is 903 runs for 7 wickets declared, by England in the Fifth Test against Australia at Kennington Oval, London, on 20, 22 and 23 Aug 1938. The highest innings in a county championship match is 887 by Yorkshire *v.* Warwickshire at Edgbaston, Birmingham on 7–8 May 1896.

Lowest innings

The lowest recorded innings is 12 made by Oxford University *v.* the Marylebone Cricket Club (MCC) at Cowley Marsh, Oxford on 24 May 1877, and 12 by Northamptonshire *v.* Gloucestershire at Gloucester on 11 June 1907. On the occasion of the Oxford match, however, the University batted a man short. The lowest score in a Test innings is 26 by New Zealand *v.* England in the second innings of the Second Test at Auckland on 28 Mar 1955.

The lowest aggregate for two innings is 34 (16 in first and 18 in second) by Border *v.* Natal in the South African Currie Cup at East London on 19 and 21 Dec 1959.

Greatest victory

The greatest recorded margin of victory is an innings and 851 runs, when Pakistan Railways (910 for 6 wickets declared) beat Dera Ismail Khan (32 and 27) at Lahore on 2–4 Dec 1964. The largest margin in England is one of an innings and 579 runs by England over Australia in the Fifth Test at The Oval on 20–24 Aug 1938 when Australia scored 201 and 123 with two men short in both innings. The most one-sided county match was when Surrey (698) defeated Sussex (114 and 99) by an innings and 485 runs at The Oval on 9–11 Aug 1888.

Most runs in a day World

The greatest number of runs scored in a day is 721 all out (ten wickets) in 5 hr 48 min by the Australians *v.* Essex at Southchurch Park, Southend-on-Sea on 15 May 1948.

Most runs in a day Test match

The Test record for runs in a day is 588 at Old Trafford, Manchester, on 27 July 1936 when England added 398 and India were 190 for 0 in their second innings by the close.

Fastest 200 or more

The fastest recorded exhibition of hitting occurred in a Kent *v.* Gloucestershire match at Dover on 20 Aug 1937, when Kent scored 219 runs for two wickets in 71 min, at the rate of 156 runs for each 100 balls bowled.

BATTING RECORDS—INDIVIDUALS

Highest innings

The highest individual innings recorded is 499 in 10 hr 40 min by Hanif Mohammad (b. 21 Dec 1934) for Karachi *v.* Bahawalpur at Karachi, Pakistan, on 8, 9 and 11 Jan 1959. The highest score in England is 424 in 7 hr 50 min by Archibald Campbell MacLaren (1871–1944) for Lancashire *v.* Somerset at Taunton on 15–16 July 1895. The record for a Test match is 365 not out in 10 hr 14 min by Sir Garfield St Aubrun Sobers (b. 28 July 1936) playing for West Indies in the Third Test against Pakistan at Sabina Park, Kingston, Jamaica, on 27 Feb–1 Mar 1958. The England Test record is 364 by Sir Leonard Hutton (b. 23 June 1916) *v.* Australia in the Fifth Test at The Oval on 20, 22 and 23 Aug 1938.

1000 in May

The most recent example of scoring 1000 runs in May was by Charles Hallows (Lancashire) (1895–1972), who made precisely 1000 between 5 and 31 May 1928. Dr William Gilbert Grace (1848–1915) 9–30 May 1895, and Walter Reginald Hammond (1903–65) 7–31 May 1927, surpassed this feat with 1016 and 1042 runs. The greatest number of runs made *before the end of May* was by Thomas Walter Hayward (1871–1939) with 1074 from 16 Apr to 31 May in 1900.

Longest innings

The longest innings on record is one of 16 hr 10 min for 337 runs by Hanif Mohammad (Pakistan) *v.* West Indies at Bridgetown, Barbados, on 20–23 Jan 1958. The English record is 13 hr 17 min by Len Hutton in his record Test score of 364.

SPORTS, GAMES AND PASTIMES

Most runs Season

The greatest number of runs scored in a season is 3816 (average 90.85) in 50 innings (8 not out) by Denis Charles Scott Compton CBE (b. 23 May 1918) of Middlesex and England in 1947.

Most runs Career

The greatest aggregate of runs in a career is 61,237 (average 50.65) in 1315 innings (106 not out) from 1905 to 1934 by Sir John 'Jack' Berry Hobbs (1882–1963) of Surrey and England.

Most runs Test matches

The greatest number of runs scored in Test matches is 8114 (average 47.72) in 193 innings (23 not out) by Geoffrey Boycott OBE (b. 21 Oct 1940) between 1964 and 1982.

Most runs Off an over

The only batsman to score 36 runs off a six-ball over was Sir Garfield Sobers (Nottinghamshire) off Malcolm Andrew Nash (b. 9 May 1945) (Glamorgan) at Swansea on 31 Aug 1968. The ball (recovered from the last hit from the road by a small boy) resides in Nottingham's Museum.

Most runs Off a ball

The most runs scored off a single hit is ten by Albert Neilson Hornby (1847–1925) off James Street (1839–1906) for Lancashire *v.* Surrey at The Oval on 14 July 1873, and ten by Samuel Hill Wood (later Sir Samuel Hill Hill-Wood) (1872–1949) off Cuthbert James Burnup (1875–1960) in the Derbyshire *v.* MCC match at Lord's, London, on 26 May 1900.

Most sixes In an innings

The highest number of sixes hit in an innings is 15 by John Richard Reid, OBE (b. 3 June 1928), in an innings of 296, lasting 3 hr 40 min, for Wellington *v.* Northern Districts in the Plunket

Len Hutton scored 6971 runs in Test cricket at an average of 56.67. His 364 in 1938 remains the English record score. (*Press Association*)



SPORTS, GAMES AND PASTIMES

Cricket

Shield Tournament at Wellington, New Zealand, on 14–15 Jan 1963. The Test record is ten by Walter Hammond in an innings of 336 not out for England *v.* New Zealand at Auckland on 31 Mar and 1 Apr 1933.

Most sixes In a match

The highest number of sixes in a match is 17 (ten in the first and seven in the second innings) by William James Stewart (b. 31 Oct 1934) for Warwickshire *v.* Lancashire at Blackpool on 29–31 July 1959. His two innings were of 155 and 125.

Most boundaries in an innings

The highest number of boundaries was 68 (all in fours) by Percival Albert Perrin (1876–1945) in an innings of 343 not out for Essex *v.* Derbyshire at Chesterfield on 18–19 July 1904.

Highest score by a No. 11

The highest score by a No. 11 batsman is 163 by Thomas Peter Bromly Smith (1908–67) for Essex *v.* Derbyshire at Chesterfield on 7 Aug 1947.

Most hundreds Season

The record for the greatest number of hundreds in a season is held by Denis Compton with 18 in 1947.

Most hundreds Career

The most hundreds in a career is 197 by Sir Jack Hobbs between 1905 and 1934.

Most hundreds Test matches

The greatest number of hundreds scored in Test matches is 29 by Sir Donald George Bradman (Australia) (b. 27 Aug 1908) between 1928 and 1948. The England record is 22 by Walter Hammond of Gloucestershire, 1927 to 1947, by Michael Colin Cowdrey, CBE (b. 24 Dec 1932) (Kent), 1954 to 1975 and by Geoffrey Boycott (Yorkshire), 1964 to 1982.

Double hundreds

The only batsman to score double hundreds in both innings is Arthur Edward Fagg (1915–77), who made 244 and 202 not out for Kent *v.* Essex at Colchester on 13–15 July 1938. Sir Donald Bradman scored a career record 37 double hundreds 1927–49.

Carrying bat

Cecil John Burditt Wood (1875–1960), of Leicestershire, is the only batsman to carry his bat through both completed innings of a match, and score a hundred in both innings, (107 not out, 117 not out) on 12–14 June 1911 *v.* Yorkshire at Bradford.

Father and Son

The only case of a father and son both scoring hundreds in the same innings is that of George Gunn (1879–1958) (183) and George Vernon Gunn (1905–57) (100 no) for Nottinghamshire *v.* Warwickshire at Edgbaston on 23–24 July 1931.

Highest averages

The highest seasonal batting average in England is 115.66 for 26 innings (2429 runs including 13 hundreds) by Sir Donald Bradman (Australia) in England in 1938. The English record is 102.53 by Geoffrey Boycott of Yorkshire and England for 20 innings (1538 runs) including 6 hundreds in 1979. The world record for a complete career is 95.14 for 338 innings (28,067 runs) by Bradman between 1927 and 1949. The record for Test matches is 99.94 in 80 innings (6996 runs) by Bradman between 1928 and 1948. The English career record is 56.37 for 500 innings (62 not outs) by Kumar Shri Ranjitsinhji (1872–1933), later H. H. the Jam Saheb of Nawanagar, with 24,692 runs between 1893 and 1920.

Fastest scoring

The fastest 50 was completed off 13 balls in 8 min (1.22 to 1.30 p.m.) and in 11 scoring strokes by Clive Clay Inman (b. 29 Jan 1936) in an innings of 57 not out for Leicestershire *v.* Nottinghamshire at Trent Bridge, Nottingham on 20 Aug 1965. Full tosses were bowled to expedite a declaration.

The fastest hundred was completed in 35 min by Percy George Herbert Fender (b. 22 Aug 1892), when scoring 113 not out for Surrey *v.* Northamptonshire at Northampton on 26 Aug 1920. The most prolific scorer of hundreds in an hour or less was

Gilbert Laird Jessop (1874–1955), with 11 between 1897 and 1913. The fastest Test hundred was one of 70 min by John Morrison 'Jack' Gregory (1895–1973) for Australia *v.* South Africa at Johannesburg on 12 Nov 1921. Edwin Boaler Alletson (1884–1963) scored 189 runs in 90 min for Nottinghamshire *v.* Somerset at Hove on 20 May 1911.

A double hundred in 120 min was achieved by Gilbert Jessop (286) for Gloucestershire *v.* Sussex at Hove on 1 June 1903 and equalled by Clive Hubert Lloyd (West Indians) (b. 31 Aug 1944) *v.* Glamorgan at Swansea, on 9 Aug 1976.

The fastest treble hundred was completed in 181 min by Denis Compton, who scored 300 for the MCC *v.* North-Eastern Transvaal at Benoni on 3–4 Dec 1948.

Slowest scoring

The longest time a batsman has ever taken to score his first run is 1 hr 37 min by Thomas Godfrey Evans CBE (b. 18 Aug 1920), who scored 10 not out for England *v.* Australia in the Fourth Test at Adelaide on 5–6 Feb 1947. The longest innings without scoring is 87 minutes by Vincent Richard Hogg (b. 3 July 1952) for Zimbabwe-Rhodesia 'B' *v.* Natal 'B' at Pietermaritzburg in the South African Castle Bowl competition on 20 Jan 1980.

The slowest hundred on record is by Mudassar Nazar (b. 6 Apr 1956) of Pakistan in the First Test *v.* England at Lahore on 14–15 Dec 1977. He required 9 hr 51 min for 114, reaching the 100 in 9 hr 17 min. The slowest double hundred recorded is one of 10 hr 22 min by The Nawab Mansur Ali of Pataudi (b. 5 Jan 1941), during an innings of 200 for South Zone *v.* West Zone in the Duleep Trophy Final at Bombay on 29–31 October 1967.

Highest partnership

The record partnership for any wicket is the fourth wicket stand of 577 by Gul Mahomed (b. 15 Oct 1921), who scored 319, and Vijay Samuel Hazare (b. 11 Mar 1915) 288 in the Baroda *v.* Holkar match at Baroda, India, on 8–10 Mar 1947.

The highest stand in English cricket is the first-wicket partnership of 555 by Percy Holmes (1886–1971) (224 not out) and Herbert Sutcliffe (1894–1978) (313) for Yorkshire *v.* Essex at Leyton on 15–16 June 1932.

Longest hit

The longest measured drive from hit to pitch is one of 175 yd 160 m by Walter (later the Rev.) Fellows (1834–1901) of Christ Church, Oxford University, in a practice on their ground off Charles Rogers in 1856. J. E. C. Moore made a measured hit of 170 yd 1 ft 5 in 155.59 m at Griffith, New South Wales, Australia, in February 1930.

BOWLING

Most wickets Season

The largest number of wickets ever taken in a season is 304 by Alfred Percy 'Tich' Freeman (1888–1965) of Kent, in 1928. Freeman bowled 1976.1 overs, of which 423 were maidens, for an average of 18.05 runs per wicket.

Most wickets Career

The greatest wicket-taker in history was Wilfred Rhodes (1877–1973) of Yorkshire and England, who took 4187 wickets for 69,939 runs (average 16.70 runs per wicket) between 1898 and 1930. He also holds the record for most first-class appearances with 1107. The highest percentage of wickets gained unassisted is 73.50 per cent (1479 from 2012) by Schofield Haigh (1871–1921), who played for Yorkshire from 1895 to 1913.

Most wickets Tests

The greatest number of wickets taken in Test matches is 328 for 7568 runs (average 23.07) by Dennis Keith Lillee MBE (b. 18 July 1949) in 63 Tests for Australia between 1971 and 1982. The lowest bowling average in a Test career (minimum 15 wickets) is 112 wickets for 1205 runs (10.75 runs per wicket) by George Alfred Lohmann (1865–1901) in 18 Tests for England between 1886 and 1896.

Most wickets In an innings

The taking of all ten wickets by a single bowler has been recorded many times but only one bowler has achieved this feat on

Cricket

three occasions—Alfred Freeman of Kent, against Lancashire at Maidstone on 24 July 1929, against Essex at Southend on 13–14 Aug 1930 and against Lancashire at Old Trafford on 27 May 1931. The fewest runs scored off a bowler taking all ten wickets is ten, when Hedley Verity (1905–43) of Yorkshire dismissed (eight caught, one lbw, one stumped) Nottinghamshire at Leeds on 12 July 1932. The only bowler to have 'clean bowled' a whole side out was John Wisden (1826–84) of Sussex, playing for North v. South at Lord's in 1850.

Most wickets Match

James Charles Laker (b. 9 Feb 1922) of Surrey took 19 wickets for 90 runs (9–37 and 10–53) for England v. Australia in the Fourth Test at Old Trafford, on 27–31 July 1956. No other bowler has taken more than 17 wickets in a first-class match.

Most wickets In a day

The greatest number of wickets taken in a day's play is 17 by Colin Blythe (1879–1917) for 48 runs, for Kent against Northamptonshire at Northampton on 1 June 1907; by Hedley Verity for 91 runs, for Yorkshire v. Essex at Leyton on 14 July 1933; and by Thomas William John Goddard (1900–66) for 106 runs, for Gloucestershire v. Kent at Bristol on 3 July 1939.

Most consecutive wickets

No bowler in first-class cricket has yet achieved five wickets with five consecutive balls. The nearest approach was that of Charles Warrington Leonard Parker (1882–1959) (Gloucestershire) in his own benefit match against Yorkshire at Bristol on 10 Aug 1922, when he struck the stumps with five successive balls but the second was called as a no-ball. The only man to have taken four wickets with consecutive balls more than once is Robert James Crisp (b. 28 May 1911) for Western Province v. Griqualand West at Johannesburg on 24 Dec 1931 and against Natal at Durban on 3 Mar 1934.

Most 'hat tricks'

The greatest number of 'hat tricks' is seven by Douglas Vivian Parson Wright (b. 21 Aug 1914) of Kent, on 3 and 29 July 1937, 18 May 1938, 13 Jan and 1 July 1939, 11 Aug 1947 and 1 Aug 1949. In his own benefit match at Lord's on 22 May 1907, Albert Edwin Trott (1873–1914) of Middlesex took four Somerset wickets with four consecutive balls and then later in the same innings achieved a 'hat trick'.

Most expensive bowling

The greatest number of runs hit off one bowler in one innings is 362, scored off Arthur Alfred Mailey (1886–1967) in the New South Wales v. Victoria match at Melbourne on 24–28 Dec 1926. The greatest number of runs ever conceded by a bowler in one match is 428 by Cottari Subhann Nayudu (b. 18 April 1914) in the Holkar v. Bombay match at Bombay on 4–9 Mar 1945, when he also made the record number of 917 deliveries.



Geoff Boycott has scored most runs (8114), scored most fifties (64), has played most innings (193) and has batted longest (over 453 hours) in Test cricket. (Adrian Murrell, *All-Sport*)

Most consecutive maidens

Hugh Tayfield (b. 30 Jan 1929) bowled 16 consecutive eight-ball maiden overs (137 balls without conceding a run) for South Africa v. England in the Third Test at Durban on 25–26 Jan 1957. The greatest number of consecutive six-ball maiden overs bowled is 21 (131 balls) by Rameshchandra Gangaram 'Bapu' Nadkarni (b. 4 Apr 1932) for India v. England in the First Test at Madras on 12 Jan 1964. The English record is 17 overs (105 balls) by Horace Leslie Hazell (b. 30 Sept 1909) for Somerset v. Gloucestershire at Taunton on 4 June 1949. Alfred Shaw (1842–1907) of Nottinghamshire bowled 23 consecutive four-ball maiden overs (92 balls) for North v. South at Trent Bridge on 17 July 1876.

Three giants of Test cricket: (from left) Dennis Lillee, Ian Botham and Rodney Marsh. Marsh has kept wicket in all Lillee's Tests, and has caught 88 batsmen off his bowling, easily a Test record for one combination. This one brought Marsh his record total of Test dismissals. (Adrian Murrell, *All-Sport*)

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(above) Graham Gooch's attacking batting brought him the one-day record score of 198 not out off 177 balls against Sussex at Hove on 25 May 1982. (below) The 'Haryana Hurricane', Kapil Dev is vying with Ian Botham for the title of the world's best all-rounder. He scored a century against England off just 83 balls in 1982. (Adrian Murrell, *All Sport*)



Most balls

The greatest number of balls sent down by any bowler in a season is 12,234 (651 maidens: 298 wickets) by Alfred Francis in 1933. The most balls bowled in an innings is 588 (98 maidens) by Sonny Ramadhin (b. 1 May 1929) of Trinidad, playing for the West Indies in the First Test v. England at Edgbaston on 30 March 1957, 1, 3 and 4 June 1957.

Best average

The lowest recorded bowling average for a season (qualifying for 100 wickets) is one of 8.54 runs per wicket (186 wickets in 1,594 runs) by Alfred Shaw of Nottinghamshire in 1880.

Fastest

The highest electronically measured speed for a ball bowled in any bowler is 99.7 mph 160.45 km/h by Jeffrey Robert Thompson (b. 16 Aug 1950) (Australia) during the Second Test v. the West Indies in December 1975. Albert Cotter (1883-1917) of New South Wales, Australia, is reputed to have broken a stump on more than 20 occasions.

ALL-ROUNDERS

The 'double'

The 'double' of 1000 runs and 100 wickets in the same season was performed a record number of 16 times by Wilfred Rhodes between 1903 and 1926. The greatest number of consecutive seasons in which a player has performed the 'double' is 11 (1903-13) by George Herbert Hirst (1871-1954), of Yorkshire in England. Hirst is also the only player to score 2000 runs and take 200 wickets (208) in the same season (1906).

Test Cricket

The only players to achieve 2000 runs and 200 wickets in their Test careers are Richard 'Richie' Benaud, OBE (b. 6 Oct 1934) of Australia, with 2201 runs and 248 wickets in 63 matches between 1952 and 1964, Sir Garfield Sobers, of West Indies, with 8032 runs and 235 wickets (also 109 catches) in 93 matches between 1954 and 1974 and Ian Terrence Botham (b. 24 Nov 1947) with 2833 runs and 231 wickets in 51 matches between 1977 and July 1982. Botham is the only player to score a hundred and take eight wickets in a single innings in the same Test, with 118 runs and eight wickets for 34 for England v. Pakistan in the Second Test at Lahore on 15-19 June 1978. He is alone in scoring a hundred and taking ten wickets (6-58 and 7-48) in the same Test, for England v. India in the Golden Jubilee Test at Bombay on 15-19 February 1980. He also completed the double of 1000 runs and 100 wickets in the fewest Test matches (21) on 30 Aug 1978. Kapil Dev (b. 6 Jan 1959) of India achieved this double in the shortest time span, 1 year 107 days and at the youngest age, 21 years, 107 days, in his 25th Test.

WICKET-KEEPING

Most dismissals Season

The record number of dismissals for any wicket-keeper in a season is 127 (79 caught, 48 stumped) by Leslie Ames, CBE (b. 3 Dec 1905) of Kent in 1929. The record for the number stumped is 64 by Ames in 1932. The record for catches is 96 by James Graham Binks (b. 5 Oct 1935) of Hampshire in 1960.

Most dismissals Career

The highest total of dismissals in a wicket-keeping career is 1270 (257 stumpings) by John Thomas Murray, MBE (b. 1 Apr 1935) of Middlesex between 1952 and 1975. The record for catches is 1311 by Robert William Taylor MBE (b. 17 Feb 1941) to the start of the 1982 season. The most stumpings in a career is 415 by Leslie Ames between 1926 and 1951. The record is 302 dismissals (291 catches, 11 stumpings) in 48 Tests by Rodney William Marsh MBE (b. 4 Nov 1947) for Australia between 27 Nov 1970 and 22 Mar 1982. The most stumpings in a Test career is 52 in 54 matches by William Albert Stanley MBE (1894-1970) for Australia between 1920 and 1947.

Most dismissals Innings

The most dismissals by a wicket-keeper in an innings is eight (seven caught) by Arthur Theodore Wallace 'Wally' Grout MBE (b. 1908) for Queensland against Western Australia at Brisbane on 15 Feb 1960. The most stumpings in an innings is six by James

'Hugo' Yarnold (1917-74) for Worcestershire v. Scotland at Broughty Ferry, Tayside, on 2 July 1951. The Test record is seven (all caught) by Wasim Bari (b. 23 Mar 1948) for Pakistan in the Third Test v. New Zealand at Auckland on 23 Feb 1979, and by Robert Taylor for England v. India in the Golden Jubilee Test at Bombay on 15 Feb 1980.

Most dismissals Match

The greatest number of dismissals by a wicket-keeper in a match is 12 by Edward Pooley (1838-1907), eight caught, four stumped, for Surrey v. Sussex at The Oval on 6-7 July 1868; nine caught, three stumped by Donald Tallon (b. 17 Feb 1916) of Australia for Queensland v. New South Wales at Sydney on 2-4 Jan 1939; and also nine caught, three stumped by Hedley Brian Taber (b. 29 Apr 1940) for New South Wales v. South Australia at Adelaide 13-17 Dec 1968. The record for catches is 11, seven in the first innings and four in the second, by Arnold Long (b. 18 Dec 1940), for Surrey v. Sussex at Hove on 18 and 21 July 1964, and also by Rodney Marsh for Western Australia v. Victoria at Perth on 15-17 Nov 1975. The most stumpings in a match is nine by Frederick Henry Huish (1869-1957) for Kent v. Surrey at The Oval on 21-23 Aug 1911. The Test record for dismissals is ten, all caught, by Robert Taylor for England v. India at Bombay, 15-19 Feb 1980.

FIELDING

Most catches Innings and Match

The greatest number of catches in an innings is seven, by Michael James Stewart (b. 16 Sept 1932) for Surrey v. Northamptonshire at Northampton on 7 June 1957, and by Anthony Stephen Brown (b. 24 June 1936) for Gloucestershire v. Nottinghamshire at Trent Bridge on 26 July 1966.

The most catches in a Test match is seven by Gregory Stephen Chappell MBE (b. 7 Aug 1948) for Australia v. England at Perth on 13-17 Dec 1974, and by Yajurvindra Singh (b. 1 Aug 1952) for India v. England at Bangalore on 28 Jan-2 Feb 1977.

Walter Hammond held a record total of ten catches (four in the first innings, six in the second) for Gloucestershire v. Surrey at Cheltenham on 16-17 Aug 1928. The record for a wicket-keeper is 11 (see wicket-keeping).

Most catches Season and career

The greatest number of catches in a season is 78 by Walter Hammond in 1928, and 77 by Michael Stewart in 1957. The most catches in a career is 1018 by Frank Edward Woolley (1887-1978) of Kent between 1906 and 1938. The Test record is 120 by Colin Cowdrey in 114 matches between 1954 and 1975.

Longest throw

A cricket ball (5½ oz 155 g) was reputedly thrown 140 yd 2 ft 128.6 m by Robert Percival, a left-hander, on Durham Sands Racecourse on Easter Monday, 18 Apr 1881.

TEST RECORDS

Most Test appearances

The record number of Test appearances is 114 by Colin Cowdrey, for England between November 1954 and February 1975. The highest number of Test captaincies is 49 by Clive Lloyd who captained West Indies from 1974 to February 1982 and played in a total of 85 Tests. The most innings batted in Test matches is 193 in 108 Tests by Geoffrey Boycott. Sir Garfield Sobers (West Indies) holds the record for consecutive Tests, with 85 from April 1955 to April 1972.

Longest match

The lengthiest recorded cricket match was the 'timeless' Test between England and South Africa at Durban on 3-14 Mar 1939. It was abandoned after ten days (eighth day rained off) because the boat taking the England team home was due to leave.

Largest crowds

The greatest attendance at a cricket match is about 394,000 for the Fourth Test between India and England at Eden Gardens, Calcutta on 1-6 Jan 1982. The record for a Test series is 933,513 for Australia and England (5 matches) in 1936-37. The greatest recorded attendance at a cricket match on one day was 90,800 on the second day of the Fifth Test between Australia and West Indies at Melbourne on 11 Feb 1961. The English record is 159,000 for the Fourth Test between England and Australia at Headingley, Leeds, on 22-27 July 1948, and the record for one day probably a capacity of 46,000 for a match between Lancashire and Yorkshire at Old Trafford on 2 Aug 1926. The English record for a Test series is 549,650 for the series against Australia in 1953.

Greatest receipts

The world record for receipts from a match is £389,297 at the Second Test between England and Australia at Lords on 2-7 July 1981. The Test series record is £1,533,205 for the England v. Australia Tests of June-Sept 1981.

WORLD CUP

The Prudential World Cup held in 1975 and 1979, was won both times by West Indies. The highest team score was 334 for 4 by England v. India at Lords on 7 June 1975, and the lowest 45 by Canada v. England at Old Trafford on 14 June 1979. A higher team score, 348 for 9, was achieved by Bermuda v. Malaysia, in the preceding ICC Trophy matches, at Wednesbury, W. Midlands on 16 June 1982. The highest individual score was 171 not out by Glenn Maitland Turner (b. 26 May 1947) for New Zealand v. East Africa at Edgbaston on 7 June 1975. The best bowling was six wickets for 14 runs by Gary John Gilmour (b. 26 June 1951) for Australia v. England at Headingley on 18 June 1975.

ENGLISH COUNTY CHAMPIONSHIP

The greatest number of victories since 1890, when the championship was officially constituted, has been secured by York-

NAT WEST BANK TROPHY (formerly GILLETTE CUP), JOHN PLAYER LEAGUE AND BENSON & HEDGES CUP RECORDS

	Gillette Cup (Instituted 1963)/Nat West Bank Trophy (from 1981) - 60 overs matches	John Player League (Instituted 1969) - 40 overs matches	Benson and Hedges Cup (Instituted 1972) - 55 overs matches
Highest Individual Innings	177—C. G. Greenidge, Hampshire v. Glamorgan, Southampton, 1975	163—C. G. Greenidge, Hampshire v. Warwickshire, Edgbaston, 1979	198—G. A. Gooch, Essex v. Sussex, Hove, 1982
Best Individual Bowling	7-15—A. L. Dixon, Kent v. Surrey, Oval, 1967	8-26—K. D. Boyce, Essex v. Lancashire, Old Trafford, 1971. NB A. Ward, Derbyshire v. Sussex, Derby, 1970, 4 wickets in 4 balls	7-12—W. W. Daniel, Middlesex v. Minor Counties (East), Ipswich, 1978
Highest Innings Total	371 for 4 (off 60 overs), Hampshire v. Glamorgan, Southampton, 1975	307 for 4 (off 38 overs), Worcestershire v. Derbyshire, Worcester, 1975	350 for 3 (off 55 overs), Essex v. Oxford & Cambridge Universities, Chelmsford, 1979
Lowest Innings Total	41 (off 20 overs), Cambridgeshire v. Buckinghamshire, Cambridge, 1972 41 (off 19.4 overs), Middlesex v. Essex, Westcliff, 1972 41 (off 36.1 overs), Shropshire v. Essex, Wellington, 1974	23 (off 19.4 overs), Middlesex v. Yorkshire, Headingley, 1974	56 (off 26.2 overs), Leicestershire v. Minor Counties, Wellington, 1982
Highest Partnership	234* for 4th wicket—D. Lloyd and C. H. Lloyd, Lancashire v. Gloucestershire, Old Trafford, 1978	218 for 1st wicket—A. R. Butcher and G. P. Howarth, Surrey v. Gloucestershire, Oval, 1976	285* for 2nd wicket—C. G. Greenidge and D. R. Turner, Hampshire v. Minor Counties (South), Amersham, 1973
Most Wins	4 Lancashire 1970-2, 1975	3 Kent 1972-3, 1976	3 Kent 1973, 1976, 1978

*Not Out

shire with 29 outright wins, and one shared with Nottinghamshire and Middlesex in 1949. The most 'wooden spoons' have been won by Northamptonshire, with eleven since 1923. They did not win a single match between May 1935 and May 1939. The record number of consecutive title wins is seven by Surrey from 1952 to 1958. The greatest number of appearances in county championship matches is 763 by Wilfred Rhodes for Yorkshire between 1898 and 1930, and the greatest number of consecutive appearances is 423 by Kenneth George Suttle (b. 25 Aug 1928) of Sussex between 1954 and 1969. James Binks of Yorkshire played in every county championship match for his side between his debut in 1955 and his retirement in 1969—412 matches. The seven sons of the Rev Henry Foster, of Malvern, uniquely all played county cricket for Worcestershire between 1899 and 1934.

OLDEST AND YOUNGEST

The oldest man to play in a Test match was Wilfred Rhodes, aged 52 yr 165 days, when he played for England v. West Indies at Kingston, Jamaica on 12 April 1930. The youngest was Mush-taq Mohammad (b. 22 Nov 1943), aged 15 yr 124 days, when he played for Pakistan v. West Indies at Lahore on 26 March 1959. England's youngest player was Dennis Brian Close CBE (b. 24 Feb 1931) aged 18 yr 149 days v. New Zealand at Old Trafford on 23 July 1949.

The oldest player in first-class cricket was Col Cottari Kanakaiya Nayudu (1895–1967) (India), aged 68 yr 4 days, when he played for the Maharashtra Governor's XI v. Chief Minister's XI at Nagpur, India on 4 Nov 1963. The youngest is reputed to be Qasim Feroze (Pakistan) (b. 21 Jan 1958) who played for Bahawalpur v. Karachi Whites on 19 Jan 1971 aged 12 yr 363 days. The oldest Englishman was George Robert Canning, the 4th Lord Harris (1851–1932) who played for Kent v All India at Catford on 4 July 1911 aged 60 yr 151 days. The youngest English first-class player was Charles Robertson Young when he played for Hampshire against Kent at Gravesend on 13 June 1867, aged 15 yr 131 days.

WOMEN'S CRICKET

Earliest

The first recorded women's match took place at Gosden Common, Surrey, England on 26 July 1745. *Circa* 1807 Christina Willes is said to have introduced the roundarm bowling style. The first Test match was Australia v. England at Brisbane on 28 Dec 1934. The International Women's Cricket Council was formed in 1958.

Batting Individual

The highest individual innings recorded is 224 not out by Mabel Bryant for Visitors v. Residents at Eastbourne, East Sussex, in August 1901. The highest innings in a Test match is 189 by Elizabeth Alexandra 'Betty' Snowball for England v. New Zealand at Christchurch, NZ on 16 Feb 1935. The highest Test innings in England is 179 by Rachael Flint, MBE (*née* Heyhoe) for England v. Australia at The Oval, London on 27–28 July 1976. Rachael Flint also has scored the most runs in Test cricket with 1789 in 22 matches from December 1960 to July 1979.

Batting Team

The highest innings score by any team is 567 by Tarana v. Rockley, at Rockley, NSW Australia in 1896. The highest Test innings is 503 for five wickets declared by England v. New Zealand at Christchurch, NZ on 16 Feb 1935. The most in a Test in England is 379 by Australia v. England at The Oval, London on 26–27 July 1976. The highest innings total by any team in England is 406 by the South v. Australia at Hove, East Sussex on 17–19 July 1937.

The lowest innings in a Test is 35 by England v. Australia at Melbourne, Australia on 22–24 Feb 1958. The lowest in a Test in England is 63 by New Zealand at Worcester on 3, 5–6 July 1954.

Bowling

The greatest number of wickets taken in Test matches is 77 by Mary Duggan (England) in 16 Tests from 1949 to 1963.

On 26 June 1931 Rubina Winifred Humphries (b. 19 Aug 1915), for Dalton Ladies v. Woodfield SC, took all ten wickets for no runs. (She also scored all her team's runs.) This bowling feat was

equalled by Rosemary White for Wallington LCC v. Beaconsfield LCC in July 1962.

World Cup

Three women's World Cups have been staged. Australia won in 1978 and 1982 and England in 1973.

MINOR CRICKET RECORDS

(where excelling those in First Class Cricket)

Highest individual innings

In a Junior House match between Clarke's House (now Poole) and North Town, at Clifton College, Bristol, 22–23, 26–28 June 1899, Arthur Edward James Collins (b. India, 1885—k. Flanders, November 1914) scored an unprecedented 628 not out in 6 hr 50 min, over five afternoons' batting, carrying his bat through the innings of 836. The scorer, E. W. Pegler, gave the score as '628—plus or minus 20, shall we say'.

Fastest individual scoring

Stanley Keppel 'Shunter' Coen (South Africa) (1902–67) scored 50 runs (11 fours and one six) in 7 min for Gezira v. the RAF in 1942. The fastest hundred by a prominent player in a minor match was by Vivian Frank Shergold Crawford (1879–1922) in 19 min at Cane Hill, Surrey on 16 Sept 1899. Greg Beacroft (b. 20 Jan 1958) scored 268 (including 29 sixes and 11 fours) in 92 min for Yass Wallaroos v. Williamsdale at Canberra, ACT, Australia on 21 Jan 1979.

Successive sixes

Cedric Ivan James Smith hit nine successive sixes for a Middlesex XI v. Harrow and District at Rayner's Lane, Harrow, Greater London in 1935. This feat was repeated by Arthur Dudley Nourse (1910–81) in a South African XI v. Military Police match at Cairo, Egypt in 1942–3. Nourse's feat included six sixes in one over.

Fastest and Slowest scoring rates

In the match Royal Naval College, Dartmouth v. Seale Harrow Agricultural College in 1923, Kenneth Anderson Sellar (now Cdr 'Monkey' Sellar, DSO, DSC, RN) (b. 11 Aug 1906) and Leslie Kenneth Allen Block (later Judge Block, DSC) (1906–80) were set to score 174 runs in 105 min but achieved this total in 33 min, so averaging 5.27 runs per min. Playing for Gentlemen of Leicestershire CC v. Free Foresters, at Oakham, Rutland, on 19 Aug 1963, Ian H. S. Balfour batted for 100 min without adding to his score of five runs. He went on to make 39.

Consecutive not out hundreds

Gerald Vivian William Lukehurst (b. 5 Oct 1917) of Kent, hit six consecutive not out hundreds for Gore Court and F. Dyer XI between 3 July and 20 July 1955.

Most runs off a ball

A scoring stroke of 11 (all run, with no overthrows) was achieved by Lt (later Lt-Col) Philip Mitford (1879–1946), QO Cameron Highlanders, in a Governor's Cup match in Malta on 28 May 1903.

Greatest stand

T. Patten and N. Rippon made a third wicket stand of 641 for Buffalo v. Whorouly at Gapsted, Victoria, Australia, on 19 Mar 1914.

Bowling

Stephen Fleming bowling for Marlborough College 'A' XI, New Zealand v. Bohally Intermediate at Blenheim, New Zealand in December 1967 took nine wickets in nine consecutive balls. In February 1931 in a schools match in South Africa Paul Hupp also took nine wickets with nine consecutive balls for Smithfield School v. Aliwal North. In the Inter-Divisional Ships Shield at Purfleet, Essex, on 17 May 1924, Joseph William Brockley (b. 9 Apr 1907) took all ten wickets, clean bowled, for two runs in 11 balls—including a triple hat trick.

In 1881 Frederick Robert Spofforth (1853–1926) in Australia clean bowled all ten wickets in *both* innings. J. Bryant for Eureka v. Deaf Mutes in Melbourne on 15 and 22 Oct 1887, and Albert Rimmer for Linwood School v. Cathedral GS at Canterbury, New Zealand in December 1925 repeated the feat. In 1910, H. Hopkinson, of Mildmay CC London, took 99 wickets for 147 runs.

Cricket/Croquet/Cross-Country Running

Maurice Hanes bowled 107 consecutive balls (17 overs and five balls) for Bedworth II v. A P Leamington II at Bedworth, Warwickshire on 16 June 1979, without conceding a run.

Wicket-keeping

In Ceylon, playing for Mahinda College v. Galle CC, at the Galle Esplanade, Welihinda Badalge Bennett (b. 25 Jan 1933) caught four and stumped six batsmen in one innings, on 1 March 1953.

Fielding

In a Wellington, New Zealand secondary schools 11-a-side match on 16 Mar 1974, Stephen Lane, 13, held 14 catches in the field (seven in each innings) for St Patrick's College, Silverstream v. St Bernard's College, Lower Hutt.

Marathon

A match under MCC rules was played by 22 members of St Peter's School, Bournemouth, Dorset for 137 hr, on 25 June–1 July 1980.

CROQUET

Earliest references

Croquet was probably derived from the French game *Jeu de Mail* first mentioned in the 12th century. In its present-day form, it originated as a country-house lawn game in Ireland in the 1830s when it was called 'crokey' and was introduced to Hampshire 20 years later. The first club was formed in the Steyne Gardens, Worthing, West Sussex in 1865.

Most championships

The greatest number of victories in the Open Croquet Championships (instituted at Evesham, Hereford & Worcester, 1867) is ten by John William Solomon (b. 1932) (1953, 1956, 1959, 1961, 1963–8). He has also won the Men's Championship on ten occasions (1951, 1953, 1958–60, 1962, 1964–5, 1971 and 1972), the Open Doubles (with Edmond Patrick Charles Cotter) on ten occasions (1954–5, 1958–9, 1961–5 and 1969) and the Mixed Doubles once (with Freda Oddie) in 1954, making a total of 31 titles. Solomon has also won the President's Silver Cup (inst. 1934) on nine occasions (1955, 1957–9, 1962–4, 1968 and 1971). He has also been Champion of Champions on all four occasions that this competition has been run (1967–70).

Dorothy Dyne Steel (1884–1965), fifteen times winner of the Women's Championship (1919–39), won the Open Croquet Championship four times (1925, 1933, 1935–36). She had also five Doubles and seven Mixed Doubles for a total of 31 titles.

International trophy

The MacRobertson International Shield (instituted 1925) has been played for ten times. It has been won most often by Great Britain with six wins (in 1925, 1937, 1956, 1963, 1969 and 1974). The players to make five international appearances are J. C. Windsor (Australia) in 1925, 1928, 1930, 1935 and 1937 and John Solomon (GB) in 1951, 1956, 1963, 1969 and 1974.

Lowest handicap

Historically the lowest playing handicap has been that of Humphrey Osmond Hicks (Devon) (b. 1904) with minus 5½. In 1974 the limit was however fixed at minus 5. The player holding the lowest handicap is G. Nigel Aspinall with minus 5.

Marathon

The longest croquet match on record is one of 106 hr by Craig Calvert, Andrew Cooksey, Stephen Foden and Peter Wood at Rossall School, Fleetwood, Lancashire on 1–5 July 1981.

CROSS-COUNTRY RUNNING

World International championships

The earliest recorded international cross-country race took place over 14.5 km 9 miles 18 yd from Ville d'Avray, outside Paris, on 20 Mar 1898, between England and France (England won by 21 points to 69). The inaugural International Cross-Country Championships took place at the Hamilton Park Racecourse, Scotland, on 28 Mar 1903. The greatest margin of victory is 56 sec or

SPORTS, GAMES AND PASTIMES



World Championships 1982: (l-r) Mohammed Kedir (Eth-42) 1st, Mike McLeod (Eng-75) 5th, Alberto Salazar (USA-174) 2nd, Werner Schildhauer (GDR-408) 8th, Wedajo Bulte (Eth-40) 12th. (Steve Powell, All-Sport)

390 yd 356 m by John 'Jack' Thomas Holden (England) (b. 13 Mar 1907) at Ayr Racecourse, Scotland, on 24 Mar 1934. The narrowest win was that of Jean-Claude Fayolle (France) (b. 10 Nov 1937) at Ostend, Belgium, on 20 Mar 1965, when the timekeepers were unable to separate his time from that of Melvyn Richard Batty (England). Since 1973 the race has been run under the auspices of the International Amateur Athletic Federation.

The greatest men's team wins have been those of England, with a minimum of 21 points (the first six runners to finish) on two occasions, at Gosforth Park, Newcastle, Tyne and Wear, on 22 Mar 1924, and at the Hippodrome de Stockel, Brussels, Belgium, on 20 Mar 1932.

Most international appearances

The runners of participating countries with the largest number of international championship appearances are:

Belgium	20	Marcel Van de Wattyne,	1946–65
Wales	14	Danny Phillips,	1922, 1924, 1926–37
Spain	14	Mariano Haro,	1962–5, 1967–9, 1971–7
Scotland	14	Jim Alder,	1962, 1964–76
France	14	Noel Tijou,	1963–75, 1977
England	12	Jack Holden,	1929–39, 1946

Two women have competed in 14 of the 15 races held: Margaret Coomber (née MacSherry) (b. 13 June 1950) (Scotland), 1967–80; and Jean Lochhead (b. 24 Dec 1946) (Wales), 1967–79, 1981.

Most wins

The greatest number of team victories have been by England with 45 for men, 11 for junior men and 6 for women.

The greatest number of men's individual victories is four by Jack Holden (England) in 1933–5 and 1939, by Alain Mimoun–

SPORTS, GAMES AND PASTIMES

o-Kacha (France) (b. 1 Jan 1921) in 1949, 1952, 1954 and 1956 and **Gaston Roelants** (Belgium) (b. 5 Feb 1937) in 1962, 1967, 1969 and 1972. **Doris Brown-Heritage** (USA) (b. 17 Sept 1942) won the women's race five times, 1967-71.

English championship

The English Cross-Country Championship was inaugurated at Roehampton, Wandsworth, London, in 1877. The most individual titles won is four by **Percy H. Stenning** (1854-92) (**Thames Hare and Hounds**) in 1877-80 and **Alfred E. Shrubbs** (1878-1964) (**South London Harriers**) in 1901-4. The most successful club in the team race has been **Birchfield Harriers** from Birmingham with 27 wins and one tie between 1880 and 1953. The largest field was the 1743 starters in 1982 at Leeds.

Largest field

The largest recorded field in any cross-country race was 10,055 starters (9650 finished) in the 30 km 18.6 miles **Lidingöloppet**, near Stockholm, Sweden, on 4 Oct 1981.

CURLING

Origins

Although a 15th century bronze figure in the Florence Museum appears to be holding a curling stone, the earliest illustration of the sport was in one of the Flemish painter **Pieter Bruegel's** winter scenes c. 1560. The game was probably introduced into Scotland by Flemings in the 15th century. The earliest documented club is **Muthill, Tayside, Scotland**, formed in 1739. The game was introduced into Canada in 1759. Organized administration began in 1838 with the formation in Edinburgh of the **Grand (later Royal) Caledonian Curling Club**, the international legislative body until the foundation of the **International Curling Federation** in 1966. The first indoor ice rink to introduce curling was in Montreal, Canada in 1807, and the first in Britain was at Southport, Merseyside in 1878.

The USA won the first **Gordon International Medal** series of matches, between Canada and the USA, at Montreal in 1884. Although demonstrated at the Winter Olympics of 1924, 1932 and 1964, curling has never been included in the official Olympic programme.

Jim Paul (in action) and **Chris McCrady** threw a total of 65,600 pounds of curling stones in 205 ends in their 38 hour marathon. (*Recorder & Times, Brockville, Ontario*)



Cross-Country Running/Curling/Cycling

Most titles

The record for World championships (inst. 1959) for the **Air Canada Silver Broom** is 14 wins by Canada, in 1959-64, 1966, 1968-72, 1980, 1982. The most **Strathcona Cup** (inst. 1903) wins is seven by Canada (1903, 1909, 1912, 1923, 1938, 1957, 1965) against Scotland. A **Ladies World Championships** was instituted in 1979 and the title has been won by Switzerland, Canada, Sweden and Denmark.

'Perfect' games

Stu Beagle, of Calgary, Alberta, Canada, played a perfect game (48 points) against Nova Scotia in the Canadian championships (Brier) at Fort William (now Thunder Bay), Ontario, on 8 Mar 1960. **Bernice Fekete**, of Edmonton, Alberta, Canada, skipped her rink to two consecutive eight-enders on the same ice at the **Derrick Club**, Edmonton, on 10 Jan and 6 Feb 1973. **Andrew McQuistin**, of Stranraer, skipped a Scotland rink to a 1-0 victory over Switzerland, scoring in the tenth end after nine consecutive blank ends, in the **Uniroyal World Junior Championships** at Kitchener-Waterloo, Ontario, Canada on 16 Mar 1980.

Largest bonspiel

The largest bonspiel in the world is the **Manitoba Bonspiel** held in Winnipeg, Canada. There were 736 teams, or rinks, of four players in the January 1981 tournament.

Largest rink

The world's largest curling rink is the **Big Four Curling Rink**, Calgary, Alberta, Canada opened in 1959. Each of its two floors has 24 sheets of ice, the total accommodating 96 teams and 384 players.

Marathons

The longest recorded curling match is one of 67 hr 32 min by eight members of **Edinburgh Young Curlers** at **Murrayfield** on 10-13 Sept 1981. The record for two curlers is 38 hr by **Jim Paul** and **Chris McCrady** at the **Brockville Country Club**, Ontario, Canada on 26-28 Mar 1982.

CYCLING

Earliest race

The earliest recorded bicycle race was a velocipede race over 2 km 1.24 miles at the **Parc de St Cloud**, Paris, on 31 May 1868, won by **Dr James Moore** (GB) (1847-1935) (later **Chevalier de la Legion d'Honneur**).

Highest speed

The highest speed ever achieved on a bicycle is 140.5 mph 226.1 km/h by **Dr Allan V. Abbott**, 29, of **San Bernadino, California, USA**, behind a wind-shield mounted on a 1955 Chevrolet over 3/4 mile 1.2 km at **Bonneville Salt Flats, Utah, USA** on 25 Aug 1973. His speed over a mile 1.6 km was 138.674 mph 223.174 km/h. It should be noted that considerable help is provided by the slipstreaming effect of the lead vehicle. **Fred Marham** recorded an official unpaced 8.80 sec for 200 m (50.84 mph 81.81 km/h) on a streamlined bicycle at **Ontario, California, USA**, on 6 May 1979.

The greatest distance ever covered in one hour is 122,771 km 76 miles 504 yd by **Leon Vanderstuyft** (Belgium) (1890-1964) on the **Montlhery Motor Circuit, France**, on 30 Sept 1928, achieved from a standing start paced by a motorcycle. The 24 hr record behind pace is 860 miles 367 yd 1384,367 km by **Hubert Ferdinand Opperman** (later **Hon Sir**) (b. 29 May 1904) in **Melbourne, Australia** on 23 May 1932.

Most titles Olympic

The most gold medals won is three by **Paul Masson** (France) in 1896, **Francisco Verri** (Italy) (1885-1945) in 1906 and **Robert Charpentier** (France) (1916-66) in 1936. **Daniel Morelon** (France) won two in 1968, and a third in 1972. He also won a bronze medal in 1964. In the 'unofficial' 1904 cycling programme, **Marcus Hurley** (USA) (1884-1950) won four events.

Most titles British

Beryl Burton, OBE (b. 12 May 1937), 23 times British all-round time trial champion (1959-81), has won 12 BCF road race titles, 14 track pursuit titles and 68 RTTC titles. Mrs Burton's career

MOST WORLD TITLES

The greatest number of world titles for a particular event won since the institution of the amateur championships in 1893 and the professional championships in 1895 are:

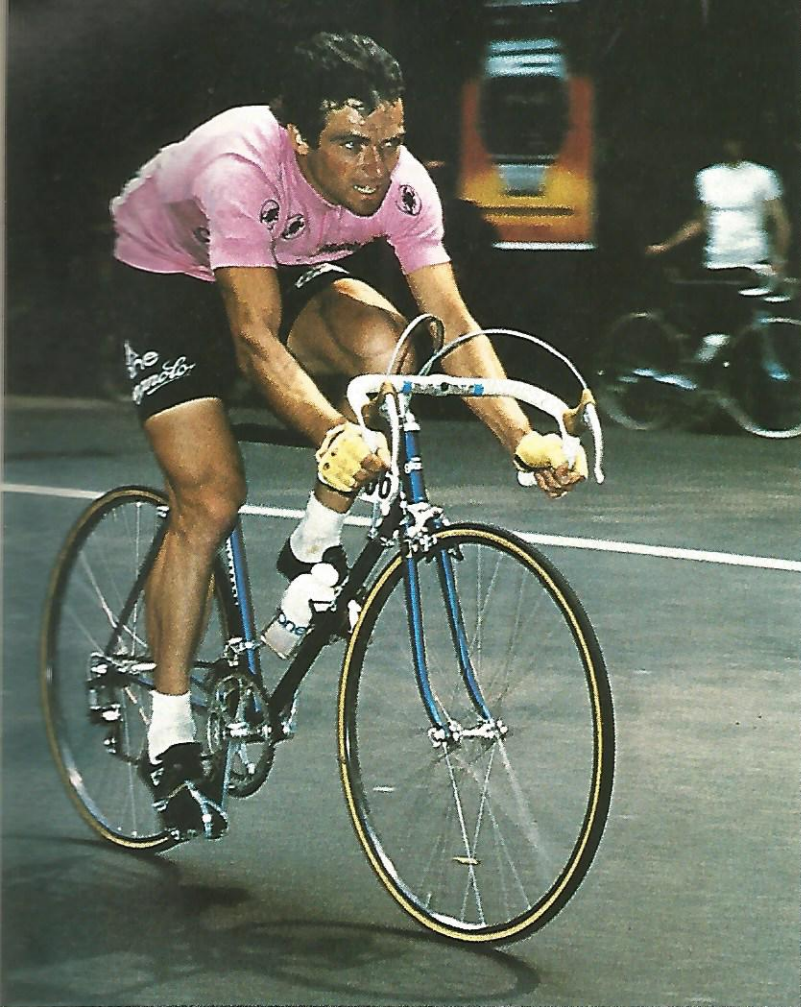
Amateur Sprint	7	Daniel Morelon (France)	1966-7, 1969-71, 1973, 1975
Amateur 100 km Motor Paced	7	Leon Meredith (UK)	1904-5, 1907-9, 1911, 1913
Amateur 1 km time trial	4	Lothar Thoms (East Germany)	1977-9, 1981
Amateur Tandem Sprint	4	Vladimir Vackar and Miroslav Vymazal (Cze)	1973-4, 1977-8
Amateur Road Race	2	Giuseppe Martano (Italy)	1930, 1932
	2	Gustav Adolf Schur (East Germany)	1958-9
Amateur Pursuit	3	Guido Messina (Italy)	1947-8, 1953
	3	Tiemen Groen (Netherlands)	1964-6
Professional Sprint	7	Jef Scherens (Belgium)	1932-7, 1947
	7	Antonio Maspes (Italy)	1955-6, 1959-62, 1964
Professional Pursuit	4	Hugh Porter, MBE (UK)	1968, 1970, 1972-3
Professional 100 km Motor Paced	6	Guillermo Timoner (Spain)	1955, 1959-60, 1962, 1964-5
Professional Road Race	3	Alfredo Binda (Italy)	1927, 1930, 1932
	3	Henri 'Rik' Van Steenberghe (Belgium)	1949, 1956-7
	3	Eddy Merckx (Belgium)	1967, 1971, 1974
Women's titles	7	Beryl Burton, OBE (UK)	1959-60, 1962-3, 1966 (pursuits) 1960, 1967 (Road)
	7	Yvonne Reynders (Belgium)	1961, 1964-5 (pursuits) 1959, 1961, 1963, 1966 (Road)

WORLD RECORDS (In events contested by professional and amateur riders only the better mark is given)**OPEN AIR TRACKS**

MEN	Distance	min sec	Name and Country	Place	Date
Professional unpaced standing start:					
	10 km	11:53.2	Eddy Merckx (Belgium)	Mexico City	25 Oct 1972
	20 km	24:06.8	Eddy Merckx (Belgium)	Mexico City	25 Oct 1972
	100 km	2 hr 14:02.5	Ole Ritter (Denmark)	Mexico City	18 Nov 1971
	1 hour	30 miles 1258 yd 49,431 km	Eddy Merckx (Belgium)	Mexico City	25 Oct 1972
Professional motor-paced:					
	100 km	1 hr 03:40.0	Walter Lohmann (West Germany)	Wuppertal, W. Germany	24 Oct 1955
	1 hour	58 miles 737 yd 94,016 km	Walter Lohmann (West Germany)	Wuppertal, W. Germany	24 Oct 1955
Amateur unpaced standing start:					
	1 km	1:02.547	Maic Malchow (East Germany)	Mexico City	3 Nov 1980
	5 km	5:50.68	Hans-Hendrick Oersted (Denmark)	Mexico City	31 Oct 1979
Amateur unpaced flying start:					
	200 metres	10.58	Gordon Singleton (Canada)	Mexico City	9 Oct 1980
	500 metres	27.31	Gordon Singleton (Canada)	Mexico City	9 Oct 1980
	1 km	59.682	Alan Cuff (NZ)	Mexico City	27 July 1980
WOMEN					
Unpaced standing start:					
	1 km	1:15.1	Irena Kirichenko (USSR)	Yerevan, USSR	8 Oct 1966
	5 km	6:44.75	Keetie Van Oostenhage (Netherlands)	Munich, W. Germany	16 Sept 1978
	10 km	13:34.39	Keetie Van Oostenhage (Netherlands)	Munich, W. Germany	16 Sept 1978
	20 km	27:26.66	Keetie Van Oostenhage (Netherlands)	Munich, W. Germany	16 Sept 1978
	100 km	2 hr 41:32.6	Maria Cressari (Italy)	Milan, Italy	17 Oct 1974
	1 hour	26 miles 1355 yd 43,082 km	Keetie Van Oostenhage (Netherlands)	Munich, W. Germany	16 Sept 1978
Unpaced flying start:					
	200 metres	11.547	Natalia Krusheinskaya (USSR)	Krylatskoye, USSR	1982
	500 metres	31.112	Natalia Krusheinskaya (USSR)	Krylatskoye, USSR	1982
	1 km	1:12.9	Lidiya Brovina (USSR)	Irkutsk, USSR	17 July 1955

INDOOR TRACKS

MEN					
Professional unpaced standing start:					
	1 hour	29 miles 192 yd 46,847 m	Siegfried Adler (West Germany)	Zürich, Switzerland	2 Aug 1968
	5 km	5:59.099	Hans-Henrik Oersted (Denmark)	Copenhagen, Denmark	28 Oct 1980
Professional unpaced flying start:					
	500 metres	28.6	Oscar Plattner (Switzerland)	Zürich, Switzerland	17 Aug 1956
	1000 metres	1:01.23	Patrick Sercu (Belgium)	Antwerp, Belgium	3 Feb 1967
Professional motor-paced:					
	100 km	1 hr 23:59.8	Guillermo Timoner (Spain)	San Sebastian, Spain	12 Sept 1965
	1 hour	46 miles 669 yd 74,642 km	Guy Solente (France)	Paris, France	13 Feb 1955
Amateur unpaced standing start:					
	1 km	1:02.955	Lothar Thoms (East Germany)	Moscow, USSR	22 July 1980
	10 km	12:06.29	Hans-Henrik Oersted (Denmark)	Copenhagen, Denmark	28 Nov 1978
	20 km	25:14.6	Ole Ritter (Denmark)	Zürich, Switzerland	30 Oct 1966
Amateur unpaced flying start:					
	200 metres	10.369	Sergei Kopylov (USSR)	Moscow, USSR	2 Aug 1981
	500 metres	28.163	Heinz Isler (Switzerland)	Zürich, Switzerland	9 July 1979
WOMEN					
Unpaced standing start:					
	1 km	1:15.66	Rosella Galbiati (Italy)	Milan, Italy	20 Oct 1981
Unpaced flying start:					
	200 metres	11.914	Galina Tsareva (USSR)	Moscow, USSR	11 June 1980
	500 metres	32.302	Galina Tsareva (USSR)	Moscow, USSR	24 Apr 1980
	1 km	1:09.077	Galina Tsareva (USSR)	Moscow, USSR	10 June 1980



(top) Bernard Hinault won the Pernod Super Prestige Trophy as France's top sportsman in 1979, 1980 and 1981 and the Tour de France four times. (*All-Sport*) (below) John Atkins won a record 13 British cyclo-cross titles over two decades. (*Colorsport*)



overshadows all male achievements. Albert White (1884-1964) gained 12 individual National track championships from the mile to 25 miles in 1920-5 and also shared in three tandems.

Tour de France (see also pp. 239-40)

The greatest number of wins in the Tour de France (inaugurated 1903) is five by Jacques Anquetil (France) (b. 8 Jan 1934) in 1961-4 and by Eddy Merckx (Belgium) (b. 17 June 1945) in 1972 and 1974. The closest race ever was in 1968 when Jan Janssen (Netherlands) (b. 19 May 1940) beat Herman van Springe (Belgium) in Paris by 38 sec. The fastest average speed was 37.84 km/h 23.51 mph by Bernard Hinault (France) (b. 1954) in 1981. The longest race was 5745 km 3569 miles in 1982 and most participants were in 1982 when 170 started.

Tour of Britain (Milk Race)

Three riders have won the Tour of Britain twice each—Bradley (1959-60), Les West (1965, 1967) and Fedor Hertog (Netherlands) (1969, 1971). The closest race ever was in 1976 when after 1035 miles 1665.67 km over 14 days (30 May-13 June) Bill Nickson (GB) (b. 30 Jan 1953) beat Joe Waghorn (GB) by 5 sec. Den Hertog recorded the fastest average speed of 25.20 mph 40.55 km/h in the 1971 race (1096 miles 1763 km). The longest Milk Race was in 1969 (1515 miles 2438 km) although the longest ever Tour of Britain was in 1959 (1515 miles 2624.84 km starting and finishing in London) under the Express sponsorship.

Six-day races

The greatest number of wins in 6-day races is by Patrick Sercu (b. 27 June 1944), of Belgium, who by April 1982 had taken the total number of victories to 84 in 18 years.

Longest one-day race

The longest single-day 'massed start' road race is the 620 km 342-385 miles Bordeaux-Paris, France, event. Over all or part of the route, the highest average speed was 47.06 km/h 29.24 mph by André Chalmel (France) in 1979.

The longest unpaced single day race is the Bristol-Bristol, England, 245 mile 394 km event. The now-defunct London-Holyhead race was over a distance of 265 miles 426 km.

Land's End to John o' Groats

The 'end to end' record for the 858 miles 1381 km is 1 day 23 hr 39 min 50 sec (average speed 18.39 mph 29.59 km/h) by Mike Coupe on 28-30 June 1982. The feminine record is 2 days 11 hr 7 min by Eileen Sheridan (b. 18 Oct 1923) on 9-11 July 1980. She completed 1000 miles 1609 km in 3 days 1 hr.

Endurance

Thomas Edward Godwin (1912-75) (GB) in the 365 days of 1939 covered 75,065 miles 120,805 km or an average of 205.65 miles 330.96 km per day. He then completed 100,000 miles 160,934 km in 500 days to 14 May 1940.

Nicholas Mark Sanders (b. 26 Nov 1957) of Glossop, Derbyshire, circumnavigated the world (13,609 road miles 21,904 km) between 7 Feb and 5 July (138 days) in 1981. Tony Michelson, of London, cycled 8339 miles 134,20 km around the coast of Great Britain in 165 days (5 July-16 Dec 1979). John Joseph Marino (b. 26 Nov 1948) rode from Santa Monica to New York City, 2861 miles 4604 km in a record 12 days 3 hr 41 min on 28 June 1980. Gerry and Ted Milner rode across Canada from Vancouver, BC to Halifax, Nova Scotia, on a tandem 3800 miles 6115 km, in 15 days 15 hr 4 min on 5-21 June 1980.

Vivekananda Selva Kumar Anandan (Sri Lanka) cycled in 187 hr 28 min non-stop around Vihara Maha Devi Park, Colombo, on 2-10 May 1979. The distance covered was 147 miles and he was moving 99.6% of the time.

Cycle touring

The greatest mileage amassed in a cycle tour was more than 402,000 miles 643,700 km by the itinerant lecturer Walter Smith (b. Sudetenland, 1926) from 24 Jan 1959 to 12 Dec 1976. He visited 159 countries starting from Romford, Essex, England.

Cycling

From 1922 to 25 Dec 1973 Tommy Chambers (b. 1903) of Glasgow, had ridden a verified total of 799,405 miles 1 286 517 km. On Xmas Day he was badly injured and has not ridden since.

Visiting every continent, John W. Hathaway (b. England, 13 Jan 1925) of Vancouver, Canada covered 50,600 miles 81 300 km from 10 Nov 1974 to 6 Oct 1976.

Veronica and Colin Scargill, of Bedford, travelled 18,020 miles 29 000 km around the world, on a tandem, 25 Feb 1974-27 Aug 1975.

The most participants in a bicycle tour was 17,344 in the 36 mile 58 km Five Borough Tour of New York on 25 Apr 1982.



Walter Stolle had over 1000 punctures, but no days illness in his 18-year cycle tour. Afterwards he retired to grow fruit trees in Spain.

BRITISH RECORDS OPEN AIR TRACKS

MEN

Distance	min sec	Name	Place	Date
Professional unpaced standing start:				
5 km	6:20.90	Ian Hallam, MBE	Leicester, Leicestershire	30 July 1979
Amateur unpaced flying start:				
500 m	31.20	Shaun Wallace	Leicester, Leicestershire	23 Aug 1980
Amateur unpaced standing start:				
1 km	1:08.3	Mark Barry	Leicester, Leicestershire	10 July 1982
10 km	13:01.08	Dave Lloyd	Leicester, Leicestershire	14 July 1981
20 km	26:01.05	Dave Lloyd	Leicester, Leicestershire	14 July 1981
1 hour	28 miles 513 yd 45,531 km	Dave Lloyd	Leicester, Leicestershire	28 July 1981
Amateur motor-paced standing start:				
50 km	42:58.00	Rik Notley	Leicester, Leicestershire	31 July 1976
1 hour	43 miles 1426 yd 70,506 km	Rik Notley	Leicester, Leicestershire	31 July 1976

WOMEN

Unpaced standing start:				
1 km	1:16.893	Brenda Atkinson	Leicester, Leicestershire	4 Aug 1981
3 km	3:59.10	Amanda Jones	Leicester, Leicestershire	1 Aug 1981
5 km	6:52.40	Amanda Jones	Leicester, Leicestershire	30 June 1981
10 km	28:31.30	Amanda Jones	Leicester, Leicestershire	30 June 1981
20 km	28:31.30	Amanda Jones	Leicester, Leicestershire	30 June 1981
1 hour	25 miles 1190 yd 41,322 km	Amanda Jones	Leicester, Leicestershire	30 June 1981

ROAD CYCLING RECORDS

(British) as recognised by the Road Time Trials Council (out-and-home records)

MEN

Distance	hr min sec	Name	Course area	Date
10 miles	19 11	David Lloyd	Tonbridge, Kent	5 Sept 1981
25 miles	49 24	Alf Engers	Kelvedon, Essex	5 Aug 1978
30 miles	1 00 11	Martin Pyne	Kelvedon, Essex	30 May 1981
50 miles	1 43 46	John Watson	Boroughbridge, North Yorkshire	23 Aug 1970
100 miles	3 38 39	Ian Cammish	Doncaster-Newark	2 Aug 1981
12 hours	286.85 miles 461.64 km	Peter Wells	Shefford, Bedfordshire	9 Sept 1979
24 hours ¹	507.00 miles 815.93 km	Roy Cromack	Cheshire	26-27 July 1969

¹ On 10 Sept 1974 Teuvo Louhivuori (Finland) cycled from Tampere to Kolari, 830.1 km 515.8 miles in 24 hours—an unofficial world best performance.

WOMEN

10 miles	21 25	Beryl Burton, OBE	Blyth, Nottinghamshire	29 Apr 1973
25 miles	53 21	Beryl Burton, OBE	Catterick, North Yorkshire	17 June 1976
30 miles	1 08 36	Beryl Burton, OBE	Kelvedon, Essex	3 Oct 1981
50 miles	1 51 30	Beryl Burton, OBE	Boroughbridge, North Yorkshire	25 July 1976
100 miles	3 55 05	Beryl Burton, OBE	Essex	4 Aug 1968
12 hours	277.25 miles 446.19 km	Beryl Burton, OBE	Wetherby, West Yorkshire	17 Sept 1967
24 hours	427.86 miles 688.57 km	Christine Minto (née Moody)	Cheshire	26-27 July 1969

ROAD RECORDS ASSOCIATION'S STRAIGHT-OUT DISTANCE RECORDS

MEN

Distance	hr min sec	Name	Date
25 miles	46 23	Alan Richards	1 Sept 1977
50 miles	1 35 45	David Lloyd	26 Oct 1974
100 miles	3 28 40	Ray Booty	28 Sept 1956
1000 miles	2 days 10 40 00	Reg Randell	19-21 Aug 1960

WOMEN

hr min sec	Name	Date
56 05	Pauline Strong	4 Oct 1981
1 55 00	Eileen Sheridan	10 Oct 1954
4 16 01	Eileen Sheridan	18 June 1952
3 days 1 00 00	Eileen Sheridan	9-12 July 1954

PLACE TO PLACE RECORDS

(British) as recognised by the Road Records Association

MEN

	hr	min	sec	Name
London to Edinburgh (380 miles 610 km)	18	49	42	Cliff Smith
London to Bath and back (212 miles 341 km)	9	03	07	John Woodburn
London to York (197 miles 317 km)	7	41	13	Bob Addy
London to Brighton and back (107 miles 172 km)	4	15	8	Phil Griffiths
Land's End to London (287 miles 461 km)	12	34	0	Robert Maitland

WOMEN

Date	hr	min	sec	Name	Date
2 Nov 1965	20	11	35	Eileen Sheridan	3-4 June 1980
13 June 1981	10	41	22	Eileen Sheridan	26 Aug 1980
6 Aug 1972	9	05	20	Eileen Sheridan	15 Aug 1980
20 July 1977	4	55	28	Gill Clapton	15 July 1980
17 Sept 1954	13	43	33	Ann Horswell	8 Sept 1980

CYCLO-CROSS

The greatest number of world championships (inst. 1950) have been won by Eric de Vlaeminck (Belgium) (b. 23 Aug 1945) with the amateur and Open in 1966 and six professional titles in 1968-73. British titles (inst. 1955) have been won most often by John Atkins (b. 7 Apr 1942) with five amateur (1961-2, 1966-8), seven professional (1969-75) and one Open title in 1977.

Pennine Way

John North (b. 18 Aug 1943) of Rawtenstall, Lancashire, cycled or carried his machine along the 271 mile 436 km Pennine Way from Edale, Derbyshire to Kirk Yetholm, Borders in 2 days 8 hr 45 min on 9-11 June 1978.

CYCLE SPEEDWAY

Origins

First mention of the sport is at Coventry in 1920 and it was first organised in 1945.

Most British titles

Most British senior team championships (inst. 1950) is five by Wednesfield Aces of Wolverhampton (1974, 1976-8, 1981). The most individual titles is four by Derek Garnett (b. 16 July 1937) (1963, 1965, 1968 and 1972).

ROLLER CYCLING

Paul Swinnerton (GB) achieved a record 102 mph 164 km/h for 200 m on rollers on 12 Feb 1982 at Stoke-on-Trent. The four-man 12 hr record is 717.9 miles 1155.5 km by a Northampton team at the Guildhall, Northampton, on 28 Jan 1978. The 24 hr solo record is 792.7 miles 1275.7 km by Bruce W. Hall at San Diego University, Calif., USA on 22-23 Jan 1977.

STATIONARY CYCLING

David Steed, of Tucson, Arizona, USA, stayed stationary without support for 9 hr 15 min on 25 Nov 1977.

DARTS

Further information can be obtained from the Guinness Book of Darts by Derek Brown, published by Guinness Superlatives Ltd at £7.50 (hard-back) and £5.95 (paperback, 1982 edition)

Origins

The origins of darts date from the use by archers of heavily weighted ten-inch throwing arrows for self-defence in close quarters fighting. The 'dartes' were used in Ireland in the 16th century and darts was played on the *Mayflower* by the Plymouth pilgrims in 1620. The modern game dates from at least 1896 when Brian Gamlin of Bury, Lancashire, is credited with inventing the present numbering system on the board. The first recorded score of 180 was by John Reader at the Highbury Tavern in Sussex in 1902. Today there are an estimated 6,000,000 darts players in the British Isles.

Most titles

Eric Bristow (b. 25 Apr 1957) has most wins in the World Masters Championship (inst 1974) with three, in 1977, 1979 and 1981, and in the World Professional Championship (inst 1978) with two, in 1980 and 1981. John Lowe (b. 21 July 1945) is the only man to have won each of the four major world titles: World Masters, 1976 and 1980; World Professional, 1979; World Cup Singles, 1981; and *News of the World*, 1981. The only men to win the annual *News of the World* individual Championship twice are Tommy Gibbons (Ivanhoe Working Men's Club) of Conisbrough, South Yorkshire, in 1952 and 1958; Tom Reddington (b. 1922) of New Inn, Stonebroom, Derbyshire in 1955 and of George Hotel, Alfreton, Derbyshire 1960; Tom M. Barrett (1909-81) (Odco Sports Club, London) in 1964 and 1965; and

Stefan Lord (b. 4 Dec 1954) of the Stockholm Super Darts Club, Sweden in 1978 and 1980.

The National Darts Association of Great Britain individual title was won by Tom O'Regan (b. 28 Feb 1939) of the Northern Star, New Southgate, Greater London in 1970-2. Margaret Flowers (b. 6 Dec 1946), in 1979 and 1980, is the only double winner of the NDA women's individual title.

World Cup

The first World Cup was held at the Wembley Conference Centre, London in 1977. Wales were the inaugural champions and England won in 1979 and 1981.

Longest unbeaten run

Mike Bowell (b. 31 May 1947) of Paulton Darts League, Avon, won 152 consecutive competition games from 9 Feb 1971 to 27 Nov 1974. The White Horse Inn, Ashton-under-Lyne, Manchester, were undefeated in a total of 169 matches from 31 Mar 1979 to 9 Feb 1981.

Fastest match

The fastest time taken for a match of three games of 301 is 1 min 58 sec by Ricky Fusco (GB) at the Perivale Residents Association Club, Middlesex, on 30 Dec 1976.

Fastest 'Round the board'

The record time for going round the board clockwise in 'trebles' at arm's length is 9.2 sec by Dennis Gower at the Millers Arms, Hastings, East Sussex on 12 Oct 1975 and 14.5 sec in numerical order by Jim Pike (1903-60) at the Craven Club, Newmarket in March 1944. The record for this feat at the 2.7 m throwing distance, retrieving own darts, is 2 min 13 sec by Bill Duddy (b. 29 Sept 1932) at The Plough, Harringay, London on 29 Oct 1972.

Least darts

Scores of 201 in four darts, 301 in six darts, 401 in seven darts and 501 in nine darts, have been achieved on various occasions. The lowest number of darts thrown for a score of 1001 is 19 by Cliff Inglis (b. 27 May 1935) (160, 180, 140, 180, 121, 180, 40) at the Bromfield Men's Club, Devon on 11 Nov 1975. A score of 2001 in 52 darts was achieved by Alan Evans (b. 14 June 1949) at Ferndale, Glamorgan on 3 Sept 1976. 3001 in 79 darts was thrown by Charlie Ellix (b. 18 Oct 1941) at The Victoria House, Tottenham, London on 29 April 1977.

Ten hour scores

The record number of trebles scored in 10 hr is 2190 by Cornwall David Leslie Bentley (b. 25 July 1947) at RAF Stanmore Park, Middlesex on 1 Mar 1980. On 19 Mar 1978 Nick Korn scored record 2814 doubles (out of 9285 darts) in 10 hr at Newquay, Cornwall. The greatest score amassed in 10 hr is 487,588 by Bruce Campbell and Peter Dawson at the Waikiki Hotel, Sullis Bay, Western Australia, on 14 Oct 1978.

24 hr scores

Eight players from the Royal Hotel, Newsome, Huddersfield scored 1,358,731 in 24 hr on one board on 26-27 May 1981.

Million and one up

Eight players from The Sir John Barleycorn, Bitterne, Hampshire scored 1,000,001 with 39,566 darts in one session from 4-6 Apr 1980.

Marathon

John Hedley and David Robson played for 120 hr 10 min at the Royal Oak Inn, Hirst Courtney, Selby, N. Yorkshire on 19-20 Mar 1982.

EQUESTRIAN SPORTS

See also *The Guinness Guide to Equestrianism* by Dorian Williams, published by Guinness Superlatives Ltd. (price £8.95).

Origins

Evidence of horse-riding dates from a Persian engraving dated c. 3,000 BC. Pignatelli's academy of horsemanship at Naples dates from the 16th century. The earliest jumping competition was at the Agricultural Hall, Islington, London, in 1869. Equestrian events have been included in the Olympic Games since 1912.

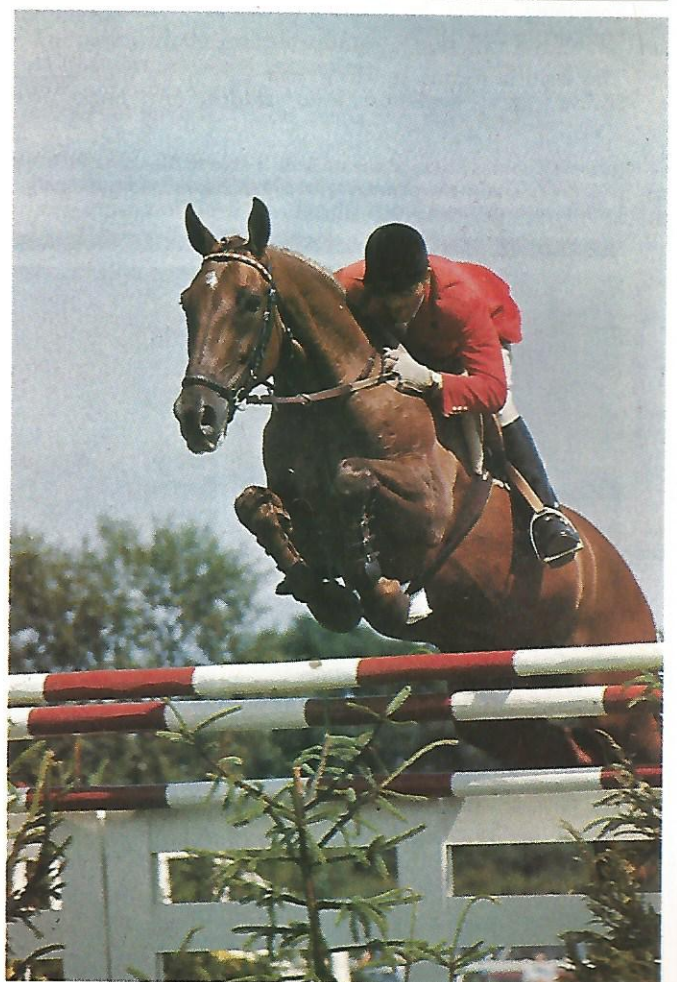
Most Olympic medals

The greatest number of Olympic gold medals is five by Hans-Günter Winkler (b. 24 July 1926) (W. Germany) who won four team gold medals as captain in 1956, 1960, 1964 and 1972 and won the individual Grand Prix in 1956. The most team wins in the Prix des Nations is five by Germany in 1936, 1956, 1960, 1964 and 1972. The lowest score obtained by a winner is no faults by Frantisek Ventura (1895–1969) (Czechoslovakia) on *Eliot*, 1928 and Alwin Schockemöhle (b. 29 May 1937) (W. Germany) on *Warwick Rex*, 1976. Pierre Jonquieres d'Oriola (b. 1 Feb 1920) (France) is the only two time winner of the individual gold medal in 1952 and 1964. Richard John Hannay Meade, OBE (b. 4 Dec 1938) (Great Britain) is the only British rider to win three gold medals—as an individual in 1972 and team titles in 1968 and 1972, all in the 3-day event.

Most titles World

The men's world championships (inst. 1953) have been won twice by Hans-Günter Winkler (W. Germany) (1954–5) and Raimondo d'Inzeo (Italy) (1956 and 1960). The women's title (1965–74) was won twice by Jane 'Janou' Tissot (*née* Lefebvre) (France) (b. Saigon, 14 May 1945) on *Rocket* (1970 and 1974).

Hans-Gunter Winkler on *Torphy*, his 1972 Olympic mount. He won the individual Olympic gold in 1956 as well as four gold, a silver and a bronze medal in team competition. (Colorsport)



Eric Bristow (*top*) with the Winmau World Masters trophy that he won for the third time in 1981 when he beat John Lowe in the final. (Colorsport). (*above*) John Lowe wears England's colours in the World Cup. He won the Singles in 1981 and he and Bristow were in England's teams that won the World Cup twice and were second once. (All-Sport)

DOMINOES

Origins

The National Museum in Baghdad, Iraq contains artifacts from Ur called 'dominoes' dated c. 2450 BC. Though unknown in Europe in c. 1750, the game reached England via France c. 1795. The Eskimo game requires 148 pieces while that in Europe utilises only 28.

Marathon

The longest session is 123 hr 4 min by Alan Mannering and David Harrison of Stoke on Trent, Staffs, on 8–13 Feb 1978.

Most titles BSJA

The most BSJA championships won is five by Alan Oliver (b. 8 Sept 1932) (1951, 1954, 1959, 1969–70). The only horses to have won twice are *Maguire* (Lt-Col Nathaniel Kindersley) (1900–80) in 1945 and 1947, *Sheila* (Seamus Hayes) in 1949–50, *Red Admiral* (Oliver) in 1951 and 1954 and *Stroller* (Marion Mould) in 1968 and 1971. The record for the Ladies' Championship is eight by Patricia Smythe (b. 22 Nov 1928), now Mrs Samuel Koechlin, OBE (1952–3, 1955, 1957–9, 1961–2). She won on *Flanagan*, owned by Robert Hanson, CBE, in 1955, 1958 and 1962—the only three-time winner.

King George V Gold Cup and Queen Elizabeth II Cup

David Broome (b. 1 Mar 1940) has won the King George V Gold Cup (first held 1911) a record five times, 1960 on *Sunsalve*, 1966 on *Mister Softee*, 1972 on *Sportsman*, 1977 on *Philco* and 1981 on *Mr Ross*. The Queen Elizabeth II Cup (first held 1949), for women, has been won four times by Elizabeth Edgar (GB), 1977 on *Everest Wallaby*, 1979 on *Forever*, 1981 and 1982 on *Everest Forever*. The only horse to win both these trophies is *Sunsalve* in 1957 (with Elisabeth Anderson) and 1960.

President's Trophy

Instituted in 1965, the Trophy has been won most times by Great Britain with nine in 1965, 1967, 1970, 1972–4, 1977–9.

Three-day event

The Badminton Three-Day Event (inst. 1949) has been won four times by Lucinda Prior-Palmer (now Green), MBE (b. 7 Nov 1953) in 1973 (on *Be Fair*), 1976 (*Wide Awake*), 1977 (*George*), and 1979 (*Killaire*) and by Capt. Mark Anthony Peter Phillips, CVO (b. 22 Sept 1948) in 1971 and 1972 (*Great Ovation*), 1974 (*Columbus*) and 1981 (*Lincoln*).

Jumping records

The official *Fédération Equestre Internationale* high jump record is 8 ft 1¼ in 2.47 m by *Huasó*, ridden by Capt Alberto Larraguiel Morales (Chile) at Vina del Mar, Santiago, Chile, on 5 Feb 1949, and 27 ft 6¾ in 8.40 m for a long jump over water by *Something*, ridden by André Ferreira (S. Africa) at Johannesburg on 26 Apr 1975.

The British record is 7 ft 7½ in 2.32 m by the 16.2 hands 167 cm grey gelding *Lastic* ridden by Nick Skelton

(b. 30 Dec 1957) at Olympia, London, on 16 Dec 1978. On 25 June 1937, at Olympia, the Lady Wright (*née* Margery Avis Bullocks) set the best recorded height for a British equestrienne on her liver chestnut *Jimmy Brown* at 7 ft 4 in 2.23 m.

The greatest recorded height reached bareback is 6 ft 7½ in 2.01 m by Michael Murphy on *Ballinahinch*, Gerry Mullins on *Gort Roe* and Maxie Scully on *Drumlogan*, all at Dublin on 12 Nov 1981.

Driving

The biennial World Driving Championships have been held five times since 1972. Great Britain won the team gold medal in 1972, 1974 and 1980 and the team bronze in 1978. The best individual performances by Britons have been silver medals won by Col Sir John Miller in 1972, and George Bowman in 1980.

Longest ride

Thomas L. Gaddie (USA) rode 11,217.2 miles 18 052 km from Dallas, Texas to Fairbanks, Alaska and back in 295 days, 12 Feb to 2 Dec 1980, with seven horses.

Horsemanship marathon

Eric Reynders of Belgium rode at all paces (including jumping) for 64 hr 45 min at Zutendaal, Belgium on 2–5 Mar 1982.

FENCING**Origins**

'Fencing' (fighting with single sticks) was practised as a sport, or as a part of a religious ceremony, in Egypt as early as c. 1360 BC. The first governing body for fencing in Britain was the Corporation of Masters of Defence founded by Henry VIII before 1540 and fencing has been practised as sport, notably in prize fights, since that time. The foil was the practice weapon for the short court sword from the 17th century. The épée was established in the mid-19th century and the light sabre was introduced by the Italians in the late 19th century.

Most titles World

The greatest number of individual world titles won is four by Christian d'Oriola (see details in table), but note that he also won

(below) Thomas L. Gaddie rode from Texas to Alaska and back in 1980. Here he rides *Old Cloudy*, an Appaloosa, on the Alaskan Highway in Canada. (Rockie L. Gaddie) (below right) Maxie Scully on *Drumlogan*, one of three horses and riders to set a world bareback jumping record at the Dublin Indoor International Horse Show.



MOST OLYMPIC AND WORLD FENCING TITLES

Event	Olympic Gold Medals
Men's Foil, Individual	2 Christian d'Oriola (France) (b. 3 Oct 1928) 1952, 56
	2 Nedo Nadi (Italy) (1894-1952) 1912, 20
Men's Foil, Team	6 France 1924, 32, 48, 52, 68, 80
Men's Épée, Individual	2 Ramón Fonst (Cuba) (1883-1959) 1900, 04
Men's Épée, Team	6 Italy 1920, 28, 36, 52, 56, 60
Men's Sabre, Individual	2 Dr Jenő Fuchs (Hungary) (b. 29 Oct 1882) 1908, 12
	2 Rudolf Kárpáti (Hungary) (b. 17 July 1920) 1956, 60
	2 Jean Georgiadis (Greece) (b. 1874) 1896, 1906
	2 Viktor Krovopousov (USSR) (b. 29 Sep 1948) 1976, 80
Men's Sabre, Team	9 Hungary 1908, 12, 28, 32, 36, 48, 52, 56, 60
Women's Foil, Individual	2 Ilona Schacherer-Elek (Hungary) (b. 17 May 1907) 1936, 48
Women's Foil, Team	4 USSR 1960, 68, 72, 76

World Championships (not held in Olympic years)

4	Christian d'Oriola (France) (b. 3 Oct 1928) 1947, 49, 53-4
4	Aleksandr Romankov (USSR) (b. 7 Nov 1953) 1974, 77, 79, 82
13	USSR 1959, 61-3, 65-6, 69-70, 73-4, 79, 81-2
3	Georges Buchard (France) (b. 21 Dec 1893) 1927, 31, 33
3	Aleksey Nikanchikov (USSR) (1940-72) 1966-7, 70
10	Italy 1931, 33, 37, 49-50, 53-5, 57-8
3	Aladár Gerevich (Hungary) (b. 16 Mar 1910) 1935, 51, 55
3	Jerzy Pawlowski (Poland) (b. 25 Oct 1932) 1957, 65-6
3	Yakov Rylsky (USSR) (b. 25 Oct 1928) 1958, 61, 63
17	Hungary 1930-1, 33-5, 37, 51, 53-5, 57-8, 66, 73, 78, 81, 82
3	Helène Mayer (Germany) (1910-53) 1929, 31, 37
3	Ilona Schacherer-Elek (Hungary) 1934-5, 51
3	Ellen Müller-Preis (Austria) (b. 6 May 1912) 1947, 49, 50 (shared)
14	USSR 1956, 58, 61, 63, 65-6, 70-1, 74-5, 77-9, 82

MOST AMATEUR FENCING ASSOCIATION TITLES

Foil	(Instituted 1898)	7	John Emrys Lloyd OBE (b. 8 Sept 1905)	1928, 1930-3, 1937-8
Épée	(Instituted 1904)	6	Edward O. 'Teddy' Bourne (b. 30 Sept 1948)	1966, 1972, 1974, 1976-8
Sabre	(Instituted 1898)	6	Dr Roger F. Tredgold (1912-75)	1937, 1939, 1947-9, 1955
Foil (Ladies)	(Instituted 1907)	10	Gillian M. Sheen (now Mrs R. G. Donaldson)	1949, 1951-8, 1960

two individual Olympic titles. Of the three women foilists with three world titles, Helène Mayer (Germany) (1929, 1931, 1937), Ellen Müller-Preis (Austria) (1947, 1949, 1950) and Ilona Schacherer-Elek (Hungary), (1934-5, 1951), only Elek won two individual Olympic titles (1936 and 1948).

Most titles Olympic

The most individual Olympic gold medals won is three by Ramón Fonst (Cuba) (1883-1959) in 1900 and 1904 (two) and by Nedo Nadi (Italy) (1894-1952) in 1912 and 1920 (two). Nadi also won three team gold medals in 1920 making a then unprecedented total of five gold medals at one celebration. Edoardo Mangiarotti (Italy) (b. 7 Apr 1919) with six gold, five silver and two bronze, holds the record of 13 Olympic medals. He won them for foil and épée from 1936 to 1960. The most gold medals by a woman is four (one individual, three team) by Elena Novikova-Belova (USSR) (b. 28 July 1947) from 1968 to 1976, and the record for all medals is seven (two gold, three silver, two bronze) by Ildikó Sági-Retjő (formerly Ujlaki-Retjő) (Hungary) (b. 11 May 1937) from 1960 to 1976.

British Olympic records

The only British fencer to win a gold medal is Gillian Mary Sheen (b. 21 Aug 1928) in the 1956 foil. A record three Olympic medals has been won by Edgar Seligman (1867-1958) with silver medals in the épée team event in 1906, 1908 and 1912. Henry William Furse Hoskyns, MBE (b. 19 Mar 1931) has competed most often for Great Britain with six Olympic appearances, 1956-76.

FIELD SPORTS

For further reading see The Guinness Guide to Field Sports by Wilson Stephens published by Guinness Superlatives at £10.50

FOXHUNTING

Earliest references

Hunting the fox in Britain became popular from the second half of the 18th century though it is mentioned very much earlier. Prior to that time hunting was confined principally to the deer and the hare. It is estimated that foxhunters account for some 10,000 of the 50,000 foxes killed each year.

Pack Oldest

The Old Charlton Hunt (later the Goodwood) in West Sussex, now extinct, the Duke of Monmouth and Lord Grey of Werke at Charlton, Sussex, and the Duke of Buckingham in north Yorkshire, owned packs which were entered to fox only during the reign (1660-85) of Charles II.

Pack Largest

The pack with the greatest number of hounds has been the Duke of Beaufort's hounds maintained at Badminton, Avon, since 1786. At times hunting six days a week, this pack once had 120 couples at hounds. It now meets four days a week.

Longest span

Jean Bethel 'Betty' McKeever (née Dawes) (b. 26 Feb 1901) has been Master of the Blean Beagles in Kent since 1909. The 10th Duke of Beaufort has been Master of Foxhounds since 1924.

Longest hunt

The longest recorded hunt was one led by Squire Sandys which ran from Holmbank, northern Lancashire to Ulpha, Cumbria, a total of nearly 80 miles 128 km in reputedly only 6 hr, in January or February 1743. The longest duration hunt was one of 10 hr 5 min by Charlton Hunt of West Sussex, which ran from East Dean Wood at 7.45 am to a kill over 57¼ miles 92 km away at 5.50 pm on 26 Jan 1738.

Largest fox

The largest fox killed by a hunt in England was a 25 lb. 11,34 kg dog in Oswaldkirk Hagg, N. Yorkshire by the Sinnington Hounds on 9 Feb 1982.

LARGEST BRITISH BAGS

Hare	1,215	11 guns	Holkham, Norfolk	19 Dec	1877
Rabbit	6,943	5 guns	Blenheim, Oxfordshire	17 Oct	1898
Geese (Brent)	704 ¹	32 punt-guns	Colonel Russell i/c, River Blackwater, Essex	c.	1860
Grouse	1,070	1 gun	Thomas, 6th Baron Walsingham in Yorkshire	30 Aug	1888
Grouse	2,929	8 guns	Littledale and Abbeystead, Lancashire	12 Aug	1915
Partridge (Wild)	2,015 ²	6 guns	Rothwell, Lincolnshire	3 Oct	1952
Pheasant	3,937	7 guns ³	Hall Barn, Beaconsfield, Buckinghamshire	18 Dec	1913
Pigeon	561	1 gun	K. Ransford, Salop-Powys	22 July	1970
Snipe	1,108	2 guns	Tiree, Inner Hebrides	25 Oct-3 Nov	1906
Woodcock	228	6 guns	Ashford, County Galway, Ireland	28 Jan	1910
Woodpigeon	550	1 gun	Major A. J. Coates, near Winchester, Hampshire	10 Jan	1962

¹ Plus about 250 later picked up.

² Plus 104 later picked up.

³ Including H.M. King George V.



Jean Dawes, lady Master from 1909, calls in the Blean Beagles in 1934 at Norton Ash in Kent.

GAME SHOOTING

Record heads

The world's finest head is the 23-pointer stag in the Maritzburg collection, E. Germany. The outside span is $75\frac{1}{2}$ in 191 cm, the length $47\frac{1}{2}$ in 120 cm and the weight $41\frac{1}{2}$ lb. 18,824 kg. The greatest number of points is probably 33 (plus 29) on the stag shot in 1696 by Frederick III (1657–1713), the Elector of Brandenburg, later King Frederick I of Prussia.

Biggest bag

The largest animal ever shot by any big game hunter was a bull African elephant (*Loxodonta africana africana*) shot by E. M. Nielson, of Columbus, Nebraska, USA, 25 miles 40 km north-northeast of Mucusso, Angola, on 7 Nov 1974. The animal, brought down by a Westley Richards 0.425 stood 13 ft 8 in 4.16 m at the shoulders (see also p. 28). In November 1965 Simon Fletcher, 28, a Kenyan farmer, claimed to have killed two elephants with one 0.458 bullet.

The greatest recorded lifetime bag is 556,000 birds, including 241,000 pheasants, by the 2nd Marquess of Ripon (1852–1923). He himself dropped dead on a grouse moor after shooting his 52nd bird on the morning of 22 Sept 1923.

Largest shoulder guns

The largest bore shoulder guns made were 2-bore. Less than a dozen of these were made by two English wildfowl gunmakers c. 1885. Normally the largest guns made are double-barrelled 4-bore weighing up to 26 lb 11 kg which can be handled only by men of exceptional physique. Larger smooth-bore guns have been made, but these are for use as punt-guns.

FIVES

ETON FIVES

A handball game against the buttress of Eton College Chapel was first recorded in 1825. New courts were built at Eton in 1840, the rules were codified in 1877, rewritten laws were introduced three times and last amended in 1981. There are courts in several countries besides England, with more than a dozen in northern Nigeria.

Most titles

Only one pair has won the Amateur Championship (Kinaird Cup) eight times—Anthony Hughes and Arthur James Gordon Campbell (1958, 1965–8, 1971, 1973 and 1975). Hughes was also in the winning pair in 1963 making nine titles in all. The Clubs' championship (the Alan Barber Cup) has been won nine times out of 13 final appearances by Old Cholmeleians.

RUGBY FIVES

As now known, this game dates from c. 1850 with the first inter-public school matches recorded in the early 1870s. The Oxford v. Cambridge contest was inaugurated in 1925 and the Rugby Fives Association was founded in the home of Dr Edgar Cyriax (1874–1954), in Welbeck Street, London, on 29 Oct 1927. The dimensions of the Standard Rugby Fives court were approved by the Association in 1931.

Most titles

The greatest number of Amateur Singles Championships (instituted 1932) ever won is nine by Wayne Enstone in 1973–8 and 1980–2. The record for the Amateur Doubles Championship (instituted 1925) is seven shared by John Frederick Pretlove (1952, 1954, 1956–9, 1961) and David E. Gardner (1960, 1965–6, 1970–2, 1974).

FOOTBALL (ASSOCIATION)

A specialist volume The Guinness Book of Soccer Facts and Feats (4th ed.) by Jack Rollin has been published by Guinness Superlatives Ltd. (price £6.95).

Origins

A game with some similarities termed *Tsu-chu* was played in China in the 4th and 3rd centuries BC. One of the earliest references to the game in England is a Royal Proclamation by Edward II in 1314 banning the game in the City of London. The earliest clear representation of the game is an Edinburgh print dated 1672–3. The game was standardised with the formation of the Football Association in England on 26 Oct 1863. The oldest club is Sheffield FC, formed on 24 Oct 1857. Eleven per side became standard in 1870.

PROFESSIONAL

Longest match

The duration record for first class fixtures was set in the Copa Libertadores in Santos, Brazil, on 2–3 Aug 1962, when Santos drew 3–3 with Penarol FC of Montevideo, Uruguay. The game lasted 3 hr 30 min (with interruptions), from 9.30 pm to 1 am.

The longest British match on record was one of 3 hr 23 min between Stockport County and Doncaster Rovers in the second leg of the Third Division (North) Cup at Edgeley Park, Stockport, Greater Manchester on 30 Mar 1946.

Longest unbeaten streak

Nottingham Forest were undefeated in 42 consecutive Division I matches from 20 Nov 1977 to 9 Dec 1978. In Scottish Football Glasgow Celtic were undefeated in 62 matches (49 won, 13 drawn), 13 Nov 1915–21 April 1917.

Most postponements

The Scottish Cup tie between Inverness Thistle and Falkirk during the winter of 1978–9 was postponed a record 29 times due to weather conditions. Finally Falkirk won the game 4–0.

GOAL SCORING

Teams

The highest score recorded in a first-class match is 36. This occurred in the Scottish Cup match between Arbroath and Bon Accord on 5 Sept 1885, when Arbroath won 36–0 on their home ground. But for the lack of nets and the consequent waste of retrieval time the score must have been even higher.

The highest margin recorded in an international match is 17, when England beat Australia 17–0 at Sydney on 30 June 1951. This match is not listed by England as a *full* international. The highest in the British Isles was when England beat Ireland 13–0 at Belfast on 18 Feb 1882.

The highest score between English clubs in any major competition is 26, when Preston North End beat Hyde 26–0 in an FA Cup tie at Deepdale, Lancashire on 15 Oct 1887. The biggest victory in an FA Cup Final is six when Bury beat Derby County 6–0 at Crystal Palace on 18 Apr 1903, in which year Bury did not concede a single goal in the five Cup matches.

The highest score by one side in a Football League (Division I) match is 12 goals when West Bromwich Albion beat Darwen 12–0 at West Bromwich, West Midlands on 4 Apr 1892; when Nottingham Forest beat Leicester Fosse by the same score at Nottingham on 21 Apr 1909; and when Aston Villa beat Accrington 12–2 at Perry Barr, West Midlands on 12 Mar 1892.

The highest aggregate in League Football was 17 goals when Tranmere Rovers beat Oldham Athletic 13–4 in a Third Division (North) match at Prenton Park, Merseyside, on Boxing Day, 1935. The record margin in a League match has been 13 in the Newcastle United 13, Newport County 0 (Division II) match on 5 Oct 1946 and in the Stockport County 13, Halifax 0 (Division III (North)) match on 6 Jan 1934.

The highest number of goals by any British team in a professional league in a season is 142 in 34 matches by Raith Rovers (Scottish Division II) in the 1937–8 season. The English League record is 134 in 46 matches by Peterborough United (Division IV) in 1960–1.

Individual

The most scored by one player in a first-class match is 16 by Stephan Stanis (*né* Stanikowski, b. Poland, 15 July 1913) for Racing Club de Lens *v.* Aubry-Asturies, in Lens, France, in a wartime French Cup game on 13 Dec 1942. The record for any British first-class match is 13 by John Petrie in the Arbroath *v.* Bon Accord Scottish Cup match in 1885 (*see p.* 272). The record in League Football is ten by Joe Payne (1914–77) for Luton Town *v.* Bristol Rovers in a Division III (South) match at Luton on 13 Apr 1936. The English Division I record is seven goals by Ted Drake (b. 16 Aug 1912) for Arsenal *v.* Aston Villa at Birmingham on 14 Dec 1935, and James David Ross ('The Little Demon') for Preston North End *v.* Stoke at Preston on 6 Oct 1888. The Scottish Division I record is eight goals by James Edward McGrory (b. 26 Apr 1904) for Celtic *v.* Dunfermline Athletic at Celtic Park, Glasgow, on 14 Jan 1928.

The record number of goals scored by one player in an international match is ten by Gottfried Fuchs (1889–1972) for Germany who beat Russia 16–0 in the 1912 Olympic tournament (consolation event) in Sweden.

The record for individual goal-scoring in a British home international is six by Joe Bambrick (b. 3 Nov 1905) for Ireland *v.* Wales at Belfast on 1 Feb 1930.

Career

Artur Friedenreich (1892–1969) (Brazil) scored an undocumented 1329 goals in a 43 year first class football career. The most goals scored in a specified period is 1216 by Edson Arantes do Nascimento (b. Baurú, Brazil, 23 Oct 1940), known as Pelé, the Brazilian inside left, from 7 Sept 1956 to 2 Oct 1974 in 1254 games. His best year was 1959 with 126 and the *milesimo* (1000th) came in a penalty for his club Santos in the Maracaná Stadium, Rio de Janeiro on 19 Nov 1969 when playing his 909th first-class match. He later played for New York Cosmos and on his retirement on 1 Oct 1977 his total had reached 1281, in 1363 games. He added two more goals later in special appearances. Franz 'Bimbo' Binder (b. 1 Dec 1911) scored 1006 goals in 756 games in Austria and Germany between 1930 and 1950.

The best season League records are 60 goals in 39 League games by William Ralph 'Dixie' Dean (1907–80) for Everton (Division I) in 1927–8 and 66 goals in 38 games by James Smith (1902–76) for Ayr United (Scottish Division II) in the same season. With three more in Cup ties and 19 in representative matches Dean's total was 82.

The international career record for England is 49 goals by Robert 'Bobby' Charlton, OBE (b. Ashington, Northumberland, 11 Oct 1937). His first was *v.* Scotland on 19 Apr 1958 and his last on 20 May 1970 *v.* Colombia.

The greatest number of goals scored in British first-class football is 550 (410 in Scottish League matches) by James McGrory of Glasgow Celtic (1922–38). The most scored in League matches is 434, for West Bromwich Albion, Fulham, Leicester City and Shrewsbury Town, by George Arthur Rowley (b. Wolverhampton, 21 Apr 1926) between 1946 and April 1965. Rowley also scored 32 goals in the F.A. Cup and one for England 'B'.

Fastest goals

The fastest goals on record were scored in 6 sec by Albert Mundy (Aldershot) in a Division IV match *v.* Hartlepool United at Victoria Ground, Hartlepool, Cleveland on 25 Oct 1958, by Barrie Jones (Notts Co) in a Division III match *v.* Torquay United on 31 Mar 1962, by Keith Smith (Crystal Palace) in a Division II match *v.* Derby County at the Baseball Ground, Derby on 12 Dec 1964 and by Tommy Langley (Queen's Park Rangers) in a Division II match *v.* Bolton Wanderers on 11 Oct 1980.

The fastest confirmed hat-trick is in 2½ minutes by Ephraim 'Jock' Dodds for Blackpool *v.* Tranmere Rovers on 28 Feb 1943, and by Jimmy Scarth for Gillingham *v.* Leyton Orient in Div III (Southern) on 1 Nov 1952. A hat-trick in 1 min 50 sec is claimed for Maglioni of Independiente *v.* Gimnasia y Esgrima de la Plata in Argentina on 18 Mar 1973. John McIntyre (Blackburn Rovers) scored four goals in 5 min *v.* Everton at Ewood Park, Blackburn, Lancashire on 16 Sept 1922. William 'G.' 'Ginger'

Richardson (West Bromwich Albion) scored four goals in 5 min against West Ham United at Upton Park on 7 Nov 1931. Frank Keetley scored six goals in 21 min in the 2nd half of the Lincoln City *v.* Halifax Town league match on 16 Jan 1932. The international record is three goals in 3½ min by Willie Hall (Tottenham Hotspur) for England against Ireland on 16 Nov 1938 at Old Trafford, Greater Manchester.

Fastest own goal

Torquay United's Pat Kruse equalled the fastest goal on record when he headed the ball into his own net only 6 sec after kick-off *v.* Cambridge United on 3 Jan 1977.

GOALKEEPING**Individual record**

The longest that any goalkeeper has succeeded in preventing any goals being scored past him in international matches is 1142 min for Dino Zoff (Italy), from September 1972 to June 1974. The Football League record is 1103 min by Steve Death (b. 19 Sept 1949) for Reading in Division IV from 24 March to 18 Aug 1979.

FA CHALLENGE CUP AND SCOTTISH FA CUP**Most wins**

The greatest number of FA Cup wins is seven by Aston Villa, 1887, 1895, 1897, 1905, 1913, 1920 and 1957 (nine final appearances) and by Tottenham Hotspur, 1901, 1921, 1961, 1962, 1967, 1981 and 1982 (seven appearances). Newcastle United have been in the final 11 times. The highest aggregate scores have been 6–1 in 1890, 6–0 in 1903 and 4–3 in 1953.

The greatest number of Scottish FA Cup wins is 26 by Celtic in 1892, 1899, 1900, 1904, 1907–8, 1911–12, 1914, 1923, 1925, 1927, 1931, 1933, 1937, 1951, 1954, 1965, 1967, 1969, 1971, 1972, 1974, 1975, 1977 and 1980.

Youngest player

The youngest player in a FA Cup Final was Paul Allen (b. 28 Aug 1962) of West Ham United, who played against Arsenal on 10 May 1980 aged 17 years 256 days. Derek Johnstone (Rangers) (b. 4 Nov 1953) was 16 years 11 months old when he played in the Scottish League Cup Final against Celtic on 24 Oct 1970. The youngest goal scorer in the FA Cup Final was John Sissons (b. 30 Sept 1945) who scored for West Ham United *v.* Preston North End on 2 May 1964. The youngest player ever in the FA Cup competition was Scott Endersby (b. 20 Feb 1962) who was only 15 years 288 days old when he played in goal for Kettering *v.* Tilbury on 26 Nov 1977.

Most medals

Three players have won five FA Cup Winner's Medals: James Forrest (Blackburn Rovers) (1884–6, 1890–1); the Hon Sir Arthur Fitzgerald Kinnaird, KT (Wanderers) (1873, 1877–8) and Old Etonians (1879, 1882) and Charles H. R. Wollaston (Wanderers) (1872–3, 1876–8).

The most Scottish Cup winners' medals won is eight by Charles Campbell (Queen's Park) in 1874–6, 1880–2, 1884 and 1886.

Longest tie

The most protracted FA Cup tie in the competition proper was that between Stoke City and Bury in the third round with Stoke winning 3–2 in the fifth meeting after 9 hr 22 min of play in January 1955. The matches were at Bury (1–1) on 8 Jan; Stoke on Trent on 12 Jan (abandoned after 22 min of extra time with the score 1–1); Goodison Park (3–3) on 17 Jan; Anfield (2–2) on 19 Jan; and finally at Old Trafford on 24 Jan. In the 1972 final qualifying round Alvechurch beat Oxford City after five previous drawn games.

FOOTBALL LEAGUE CUP**Most Wins**

The most Football League Cup wins is three by Aston Villa in 1961, 1975 and 1977.

LEAGUE CHAMPIONSHIPS**World**

The world record number of successive national League championship wins is nine by Celtic (Scotland) 1966–74, CSKA, Sofia

SPORTS, GAMES AND PASTIMES

Football (Association)

(Bulgaria) 1954-62 and MTK Budapest (Hungary) 1917-25. The Sofia club hold a European postwar record of 22 league titles.

English

The greatest number of League Championships (Division I) is 13 by Liverpool in 1901, 1906, 1922, 1923, 1947, 1964, 1966, 1973, 1976-7, 1979-80 and 1982. The record number of wins in a season is 33 from 42 matches by Doncaster Rovers in Division III (North) in 1946-7.

'Double'

The only FA Cup and League Championship 'doubles' are those of Preston North End in 1889, Aston Villa in 1897, Tottenham Hotspur in 1961 and Arsenal in 1971. Preston won the League without losing a match and the Cup without having a goal scored against them throughout the whole competition.

Scottish

Glasgow Rangers have won the Scottish League Championship 35 times between 1899 and 1976 and were joint champions on another occasion. Their 76 points (pre-1981 scoring) in the Scottish Division I in 1920-1 represents a record in any division.

Closest win

In 1923-4 Huddersfield won the Division I championship over Cardiff by 0.02 of a goal with a goal average of 1.81.

TOURNAMENT RECORDS

World Cup

The *Fédération Internationale de Football Association* (FIFA) was founded in Paris on 21 May 1904 and instituted the World Cup Competition on 13 July 1930, in Montevideo, Uruguay.

The only country to win three times has been Brazil in 1958, 1962 and 1970. Brazil was also second in 1950 and third in 1938 and 1978, and is the only one of the 47 participating countries to have played in all twelve competitions. Antonio Carbajal (b. 1923) played for Mexico in goal in the five competitions from 1950 to 1966. The record goal scorer has been Just Fontaine (b. Marrakesh, Morocco, 18 Aug 1933) (France) with 13 goals in six games in the final stages of the 1958 competition in Sweden. The most goals scored in a final is three by Geoffrey Charles Hurst, (b. Ashton-under-Lyne, Greater Manchester, 8 Dec 1941) (West Ham United) for England v. W. Germany on 30 July 1966. Gerd Müller (W. Germany) (b. 3 Nov 1945) holds the aggregate record for goals scored in the World Cup Finals with 14 in 1970 and 1974.

The highest score in a World Cup match is New Zealand's 13-0 defeat of Fiji in a qualifying match at Auckland on 16 Aug 1981. The highest score in the Finals Tournament is Hungary's 10-1 win over El Salvador at Elche, Spain on 15 June 1982. The fastest goal in World Cup competition was one in 27 sec by Bryan Robson for England v. France in Bilbao on 16 Jun 1982.

World Club Championship

This club tournament was started in 1960 between the winners of the European Cup and the Copa Libertadores, the South American equivalent. Three clubs have won it twice: Penarol, Uruguay in 1961, 1966; Santos, Brazil in 1962, 1963; and Inter-Milan in 1964, 1965.

European Championship (formerly Nations Cup)

The European equivalent of the World Cup started in 1958 and is staged every four years. Each tournament takes two years to run with the semi-finals and final in the same country. W. Germany have won twice in 1972 and 1980.

European Champion Clubs Cup

The European Cup for the League champions of the respective nations was approved by FIFA on 8 May 1955 and was run by the European governing body UEFA (Union of European Football Associations) which came into being in the previous year. Real Madrid won the first final, and have won a record six times, including five times consecutively, 1956-60, 1966.

Glasgow Celtic became the first British club to win the Cup beating Inter-Milan 2-1 in Lisbon, Portugal, on 25 May 1967. They also became the only British club to win the European Cup and the two senior domestic tournaments (League and Cup) in the same season. Liverpool, winners in 1977, 1978 and 1981, have been the most successful British club.

European Cup Winners Cup

A tournament for the national Cup winners started in 1960. Clubs to win twice have been AC Milan 1968 and 1973, Ajax, Lecht 1976 and 1978, and Barcelona 1979 and 1982. Tottenham Hotspur were the first British club to win the trophy, beating Atletico Madrid 5-1 in Rotterdam in 1963.

UEFA Cup

Originally known as the International Inter-City Industrial Fairs Cup, this club tournament began in 1955. The first competition lasted three years, the second two years. In 1960-1 it became an annual tournament and since 1971-2 has been replaced by the UEFA Cup. The first British club to win the trophy were Leeds United in 1968. The most wins is three by Barcelona in 1958, 1960 and 1966.

PLAYERS

Most international appearances

The greatest number of appearances for a national team is 150 by Hector Chumpitaz (b. 12 Apr 1943) (Peru) from 1963 to 1978. This includes all matches played by the national team. The record for full internationals against other national teams is 111 by Bjorn Nordqvist (Sweden) (b. 6 Oct 1942) from 1963 to 1978.

Most appearances Home Countries

Robert Frederick 'Bobby' Moore, OBE (b. Barking, Greater London, 12 Apr 1941) of West Ham United and Fulham set a new record of full international appearances by a British footballer by playing in his 108th game for England v. Italy on 14 Nov 1973 at Wembley. His first appearance was v. Peru on 20 May 1962 and he retired from professional football on 14 May 1977 on his 1000th appearance in all matches.

Ivor Allchurch, MBE (b. 29 Dec 1929) of Swansea, Newcastle, Cardiff City and Worcester City played 68 times for Wales, including 37 times against the home countries, between 15 Nov 1950 and February 1968.

Kenny Dalglish (b. Glasgow, 4 Mar 1951), of Celtic and Liverpool, has a record total of 88 appearances for Scotland between November 1971 and June 1982.

The greatest number of appearances for N. Ireland is 96 by Patrick Jennings (b. Newry, 12 June 1945) (Watford, Tottenham Hotspur, Arsenal) April 1964 to July 1982.

Oldest and youngest caps

The oldest cap has been William Henry 'Billy' Meredith (1874-1958) (Manchester City and United) who played outside right for Wales v. England at Highbury, London, on 15 Mar 1920 when aged 45 years 229 days. He played internationally for a record span of 26 years (1895-1920).

Norman Whiteside (Manchester United) (b. 6 May 1965) played for Northern Ireland v. Yugoslavia, at 17 years 42 days on 17 June 1982, the youngest ever to play in the World Cup.

The youngest cap in the four home countries internationals has been Norman Kernaghan (Belfast Celtic) who played for Ireland v. Wales in 1936 aged 17 years 80 days. It is possible, however, that W. K. Gibson (Cliftonville) who played for Ireland v. Wales on 24 Feb 1894 at 17 was slightly younger. England's youngest home international was Duncan Edwards (b. Dudley, West Midlands, 1 Oct 1936, d. 21 Feb 1958, 15 days after the Munich air crash) the Manchester United left half, against Scotland at Wembley on 2 Apr 1955, aged 18 years 183 days. The youngest Welsh cap was John Charles (b. Swansea, 27 Dec 1931) the Leeds United centre half, against Ireland at Wrexham on 8 Mar 1950, aged 18 years 71 days. Scotland's youngest international has been Denis Law of Huddersfield Town, who played against Wales on 18 Oct 1958, aged 18 years 236 days. David Black of Hurlford, Strathclyde, may have been 17 when he played for Scotland v. Ireland in 1889.

Most durable player

The most durable player in League history has been Terence



With Liverpool's thirteenth League Championship trophy (from left-top) Bruce Grobbelaar, Ronnie Whelan, Ian Rush, Alan Hansen, Kenny Dalglish, Mark Lawrenson, Craig Johnston, Phil Thompson; (front) Sammy Lee, Graham Souness, Phil Neal. (Steve Hale) (right) Bryan Robson set a world record for the fastest World Cup goal. Earlier he was transferred for a British record sum to Manchester United from West Bromwich Albion, for whom he made his Football League debut in 1974. (Colorsport)

Lionel Paine, MBE (b. 23 Mar 1939) who made 824 league appearances from 1957 to 1977 playing for Southampton FC and Hereford Utd FC. Norman John Trollope, MBE (b. 14 June 1943) made 770 League appearances for one club, Swindon Town, between 1960 and 1980.

Transfer fees British

The record fee received by a British club was £1,500,000 (incl VAT and other levies) by Manchester United from West Bromwich Albion for Bryan Robson (b. 11 Jan 1957) on 3 Oct 1981.

Heaviest goalkeeper

The biggest goalkeeper in representative football was the England international Willie J. 'Fatty' Foulke (1874-1916), who stood 6 ft 3 in 1,90 m and weighed 22 st 3 lb 141 kg. His last games were for Bradford City, by which time he was 26 st 165 kg. He once stopped a game by snapping the cross bar.

Most successful national coaches

The teams of Helmut Schoen (b. Dresden 15 Sept 1915) of W. Germany won the 1972 European championship and the 1974 World Cup, as well as finishing second in the 1966 World Cup and 1976 European championships, and third in the 1970 World Cup. George Raynor's (b. Hoyland, West Yorkshire, 1907) Swedish teams won the 1948 Olympic competition and were second in the 1958 World Cup and third in both the 1950 World Cup and in the 1952 Olympic competition.

ATTENDANCES

Greatest crowds

The greatest recorded crowd at any football match was 205,000



(199,154 paid) for the Brazil v. Uruguay World Cup match in the Maracana Municipal Stadium, Rio de Janeiro, Brazil on 16 July 1950. The record attendance for a European Cup match is 136,505 at the semi-final between Glasgow Celtic and Leeds United at Hampden Park, Glasgow on 15 Apr 1970.

The British record paid attendance is 149,547 at the Scotland v. England international at Hampden Park, Glasgow, on 17 Apr 1937. It is, however, probable that this total was exceeded (estimated 160,000) on the occasion of the FA Cup Final between Bolton Wanderers and West Ham United at Wembley Stadium on 28 Apr 1923, when the crowd broke in on the pitch and the start was delayed 40 min until the pitch was cleared. The counted admissions were 126,047.

The Scottish Cup record attendance is 146,433 when Celtic played Aberdeen at Hampden Park on 24 Apr 1937. The record attendance for a League match in Britain is 118,567 for Rangers v. Celtic at Ibrox Park, Glasgow on 2 Jan 1939.

For details of the largest football stadiums, see pp. 120-1.

Smallest crowd

The smallest crowd at a full home international was 2315 for the Wales v. Northern Ireland match of 27 May 1982 at the Racecourse Ground, Wrexham, Clwyd. The smallest paying attendance at a Football League fixture was for the Stockport County v. Leicester City match at Old Trafford, Greater Manchester, on 7 May 1921. Stockport's own ground was under suspension and the 'crowd' numbered 13 but an estimated 2000 gained free admission. When West Ham beat Castilla, of Spain (5-1) in the European Cup Winners Cup at Upton Park, Greater London, on 1 Oct 1980, there were no paying spectators due to disciplinary action by the European Football Union.

Greatest receipts

The record gross FA Cup receipts at Wembley, London, is £918,000 (excluding radio and television fees) for the final on 22 May 1982. The 'gate' at the first FA Cup Final at Kennington Oval, London on 16 Mar 1872 was £100.

The greatest receipts at any World Cup final were 2,664,925.60 Deutsche Marks (then c. £442,000) for W. Germany v. Netherlands at Munich on 7 July 1974.

The record for a British international match is £671,000 for the England v. Hungary match at Wembley on 18 Nov 1981.

Most peripatetic fans

In a period of 264 days (10 Aug 1968-30 Apr 1969) Michael Jones and Bob Wilson of Shrewsbury, viewed league matches at all 93 English and Welsh Football League grounds (inc. Berwick Rangers).

AMATEUR AND MINOR LEAGUES

Amateur Olympic wins

The only country to have won the Olympic football title three times is Hungary in 1952, 1964 and 1968. The United Kingdom won the unofficial tournament in 1900 and the official tournaments of 1908 and 1912. The highest Olympic score is Denmark 17 v. France 'A' 1 in 1908.

FA Amateur Cup wins

The greatest number of FA Amateur Cup (1893-1974) wins is ten by Bishop Auckland who won in 1896, 1900, 1914, 1921-2, 1935, 1939, 1955-7.

Amateur caps

The record number of England amateur caps is held by Rod Hunter (b. 23 Jan 1943), of Hendon, who made his 65th amateur international appearance for England v. Scotland on 5 Apr 1974.

Amateur crowd

The highest attendance at an amateur match has been 120,000 in Senayan Stadium, Jakarta, Indonesia, on 26 Feb 1976 for the Pre-Olympic Group II final, North Korea v. Indonesia.

Amateur scores Teams

The highest aggregate score in a home Amateur International is 11 goals in the England v. Scotland match (8-3) at Dulwich on

11 Mar 1939. The foreign record was when England beat France 15-0 in Paris on 1 Nov 1906.

The highest score in an FA Amateur Cup Final was eight when Northern Nomads beat Stockton 7-1 at Sunderland, Tyne and Wear in 1926, and when Dulwich Hamlet beat Marine (Lower pool) by the same score at Upton Park in 1932.

In 1975, in a Scottish ladies league match, Edinburgh Dynamo FC beat Lochend Thistle 42-0.

In an under-14 league match between Midas FC and Courage Colts, in Kent, on 11 Apr 1976, the full time score after 70 min play was 59-1. Top scorer for Midas was Kevin Graham with 17 goals. Courage had scored the first goal.

Needing to improve their goal 'difference' to gain promotion in 1979, Ilinden FC of Yugoslavia, with the collusion of the opposition, Mladost, and the referee, won their final game of the season by 134-1. Their rivals in the promotion race won their match, under similar circumstances by 88-0.

Highest scores Individual

The highest individual score in amateur internationals is six by William Charles Jordan (1885-1949) for England v. France (12-0) at Park Royal, London on 23 Mar 1908; by Vivian John Woodward (1879-1954) for England v. Holland (9-1) at Stamford Bridge, London, on 11 Dec 1909; and by Harold A. Walden (1889-1949) for Great Britain v. Hungary, in Stockholm, Sweden, on 1 July 1912. Kim Barker, 11, of South Hobart, Tasmania, Australia scored 21 goals in his team's 25-0 win over Hutchins in the under-12 competition on 11 May 1974.

Highest scores International Schoolboys

The most prolific schoolboy international scorer has been Richard Smith Bell (b. 9 Oct 1921) of Crook, Co Durham, who in the 1935-6 season scored 12 goals for England in three internationals: three v. Scotland, three v. Wales and six v. Ireland.

Highest scores Season

The greatest number of goals in a season reported for an individual player in junior professional league football is 96 by Tom Duffy (b. 7 Jan 1937), who played centre forward for Ardeer Thistle FC, Strathclyde in the 1960-1 season. Paul Anthony Moulden (b. 6 Sept 1967) scored 289 goals in 40 games for Bolton Lads Club in Bolton Boys Federation intermediate league and cup matches in 1981-2. An additional 51 goals scored in other tournaments brought his total to 340, the highest season figure reported in any class of competitive football for an individual.

Fastest goals

Wind-aided goals in 3 sec after kick-off have been scored by a number of players. Tony Bacon, of Schalmont HS scored three goals v. Icabod Crane HS in 63 sec at Schenectady, New York, USA on 8 Oct 1975.

Fastest own goal

The fastest own goal on record was one in 5 sec 'scored' by Peter Johnson of Chesham United in a match against Wycombe Wanderers on 21 Feb 1976.

Longest match

A match between Saint Ignatius College Preparatory of San Francisco and Bellarmine College Preparatory of San Jose lasted 4 hr 56 min (230 min playing time) at San Francisco, Cal, USA on 6 Feb 1982.

Longest ties

The aggregate duration of ties in amateur soccer have not been collated but it is recorded that in the London FA Intermediate Cup first qualifying round Highfield FC Reserves had to meet Mansfield House FC on 19 and 26 Sept and 3, 10 and 14 Oct 1970 to get a decision after 9 hr 50 min play with scores of 0-0, 1-1, 1-1, 3-3, and 0-2.

In the Hertfordshire Intermediate Cup, London Colney beat Leavesden Hospital after 12 hr 41 min play and seven ties from 6 Nov to 17 Dec 1971.

Paul Moulden scored 157 goals in 1980-1 and doubled that total in 1981-2. Then aged 14 he signed as an amateur for Manchester City.

Largest tournament

The Metropolitan Police 5-a-side Youth Competition in 1981 attracted an entry of 7008 teams, a record for an FA sanctioned competition.

Most and Least successful teams

The Home Farm FC, Dublin, Ireland, between 12 Oct 1968 and 10 Oct 1970 won 79 consecutive matches. Winlaton West End FC, Tyne and Wear, completed a run of 95 league games without defeat between 1976 and 1980. In six successive years the Larkwood County Junior School team of 1959-60 was unbeaten, winning 118 games and drawing three. Stockport United FC, of the Stockport Football League, lost 39 consecutive League and Cup matches from September 1976 to 18 Feb 1978.

In 5-a-side football, Hebburn Argyle Juniors won 185 successive games from 17 Oct 1977 to May 1982 in Mid-Tyne League and Cup matches.

Most disciplined

Coleridge FC of the Cambridgeshire FA completed 28 years without a single member having been cautioned, sent off or otherwise disciplined since its formation in 1954.

Most indisciplined

In the local Cup match between Tongham Youth Club, Surrey and Hawley, Hampshire, on 3 Nov 1969 the referee booked all 22 players including one who went to hospital, and one of the linesmen. The match, won by Tongham 2-0, was described by a player as 'A good, hard game'.

In a Gancia Cup match at Waltham Abbey, Essex on 23 Dec 1973, the referee, Michael J. Woodhams, sent off the entire Juventus-Cross team and some club officials. Glencraig United, Faifley, nr Clydebank, had all 11 team members and two substitutes for their match against Goldenhill Boy's Club on 2 Feb 1975 booked in the dressing room before a ball was kicked. The referee, Mr Tarbet of Bearsden, took exception to the chant which greeted his arrival. It was not his first meeting with Glencraig. The teams drew 2-2.

Ball control

Alan Nyanjong Abuto (21) of Kenya juggled a regulation soccer ball for 11 hr 36 min 19 sec non-stop at Manhattanville College, New York, USA on 7 Feb 1982. He did 85,295 repetitions with feet, legs and head without the ball ever touching the ground.

Mikael Palmqvist headed a regulation football non-stop for 3 hr (27,193 repetitions) at Bromölla Sporting Hall, Sweden on 15 Aug 1981.

Marathon 11-a-side

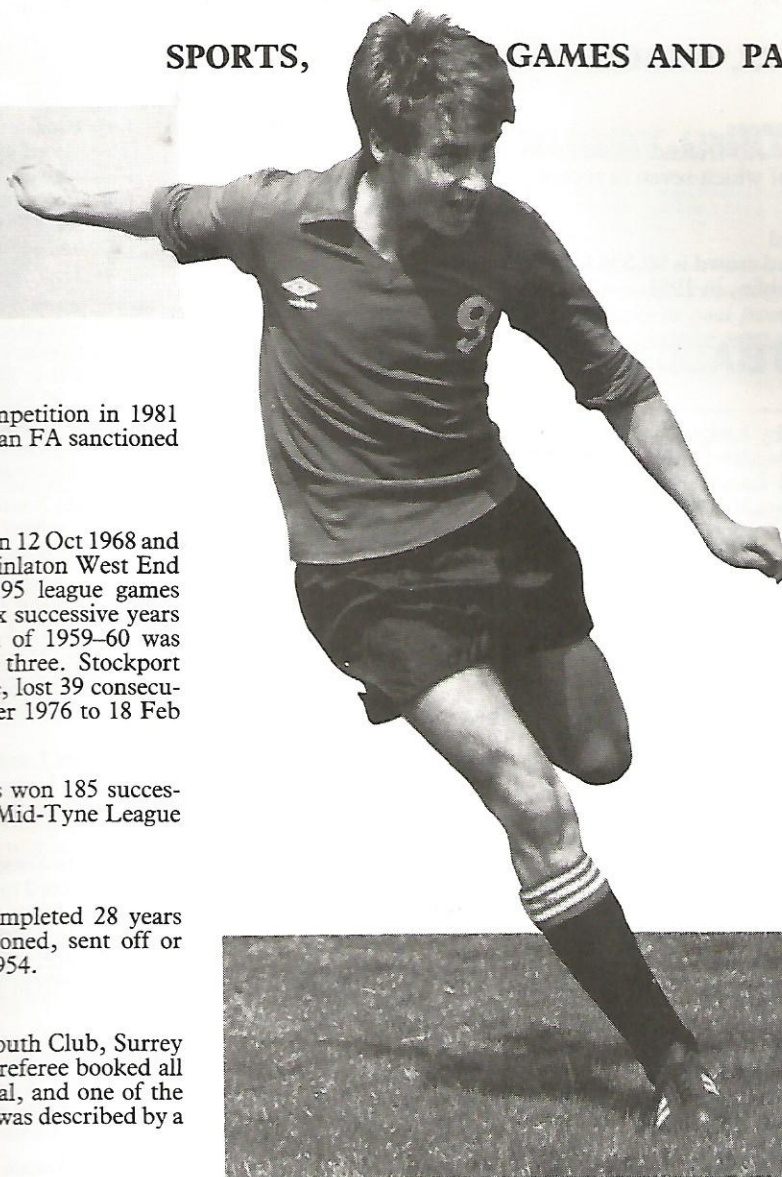
The longest recorded 11-a-side football match is 65 hr 1 min by Callinafercy Soccer Club, Co Kerry, Ireland on 1-3 Aug 1980.

Marathon 5-a-side

The longest 5-a-side games have been: outdoors; 73 hr by two teams of five from Three Medical Troop, Commando Logistic Regiment, Royal Marines at Arbroath, Scotland, on 24-26 Oct 1980, and indoors; 100 hr 10 min by teams representing Bogarts Club and Spenders Disco at the Deeside Leisure Centre, Clwyd, Wales on 8-12 Apr 1982.

TABLE FOOTBALL

Sean and Roger Connolly played for 42 hr 38 min at Warrenpoint, Co. Down, N. Ireland on 24-26 Apr 1981.



FOOTBALL (GAELIC)

Earliest references

The game developed from inter-parish 'free for all' with no time-limit, no defined playing area nor specific rules. The earliest reported match was Meath v. Louth, at Slane in 1712. Standardisation came with the formation of the Gaelic Athletic Association in Thurles, Ireland, on 1 Nov 1884.

Most titles

The greatest number of All Ireland Championships ever won by one team is 27 by Ciarraidhe (Kerry) between 1903 and 1981. The greatest number of successive wins is four by Wexford (1915-18) and Kerry twice (1929-32, 1978-81). Leinster has won most Inter-provincial championships (Railway Cup) with 18 between 1928 and 1974. Sean O'Neill (Down) holds the record of eight medals with Ulster (1960-71).

Highest scores

The highest team score in an All-Ireland final was when Dublin, 27 (5 goals, 12 points) beat Armagh, 15 (3 goals, 6 points) on 25 Sept 1977. The highest combined score was 45 points when Cork (26) beat Galway (19) in 1973. A goal equals three points. The highest individual score in an All-Ireland final has been 2 goals, 6 points by Jimmy Keaveney (Dublin) v. Armagh in 1977, and by Michael Sheehy (Kerry) v. Dublin in 1979.

Lowest scores

In four All-Ireland finals the combined totals have been 7 points; 1893 Wexford (1 goal, till 1894 worth 5 points, 1 point) v. Cork (1 point); 1895 Tipperary (4 points) v. Meath (3 points); 1904 Kerry (5 points) v. Dublin (2 points); 1924 Kerry (4 points) v. Dublin (3 points).

Most appearances

The most All-Ireland finals contested is ten by Dan O'Keeffe (Kerry) of which seven (a record) were on the winning side.

Largest crowd

The record crowd is 90,556 for the Down v. Offaly final at Croke Park, Dublin, in 1961.

FOOTBALL (RUGBY LEAGUE)**Origins**

The Rugby League was formed on 29 Aug 1895 at the George Hotel, Huddersfield, W. Yorks. Twenty one clubs from Yorkshire and Lancashire were present and all but one agreed to resign from the Rugby Union and form the 'Northern Rugby Football Union'. Though payment for loss of wages was a major cause of the breakaway the 'Northern Union' did not embrace full professionalism until 1898. A reduction in the number of players per team from 15 to 13 took place in 1906 and the present title of 'Rugby League' was adopted in 1922.

Most titles

There have been seven World Cup Competitions. Australia have most wins, with four, 1957, 1968, 1970 and 1977 as well as a win in the International Championship of 1975.

The Northern Rugby League was formed in 1901. Wigan have won the League Championship a record nine times (1909, 1922, 1926, 1934, 1946, 1947, 1950, 1952 and 1960).

In the Rugby League Challenge Cup (inaugurated 1896-7) the club with the most wins is Leeds with ten in 1910, 1923, 1932, 1936, 1941-2 (wartime), 1957, 1968, 1977-8. Oldham is the only club to appear in four consecutive Cup Finals (1924-7).

Since 1974-75 there have been five major competitions for NRL clubs: Challenge Cup, League Championship, Premiership, John Player Trophy and County Cup. Over this period only Widnes has won three in one season (Challenge Cup, John Player Trophy and Lancashire Cup) in 1978-79.

Three clubs have won all possible major Rugby League trophies in one season: Hunslet, 1907-8, Huddersfield, 1914-15 and Swinton, 1927-8, all won the Challenge Cup, League Championship, County Cup and County League (now defunct).

HIGHEST SCORES**World Cup**

The record aggregate score in a World Cup match is 72 points when Great Britain beat New Zealand at Hameau Stadium, Pau, France by 53 points to 19 on 4 Nov 1972.

Senior match

The highest aggregate score in Cup or League football in a game where a senior club has been concerned, was 121 points, when Huddersfield beat Swinton Park Rangers by 119 points (19 goals, 27 tries) to 2 points (one goal) in the first round of the Northern Union Cup on 28 Feb 1914.

HIGHEST SCORE

The highest aggregate scores in international Rugby League football are:

Match	Points
Great Britain v. Australia (Test Matches)	62
Great Britain v. New Zealand (Test Matches)	72
Great Britain v. France (Test Matches)	65
England v. Wales	73
England v. France	55
England v. Other Nationalities	61
Wales v. France	50
Wales v. Other Nationalities	48
Australia v. Great Britain	76
Australia v. Wales	70
Australia v. France (Test Matches)	62
Australia v. New Zealand (Test Matches)	74
Australia v. South Africa	75
New Zealand v. France (Test Matches)	53

Cup Final

The record aggregate in a Challenge Cup Final is 47 points when Featherstone Rovers beat Bradford Northern 33-14 at Wembley, London, on 12 May 1973. The greatest winning margin was 34 points when Huddersfield beat St Helens 37-3 at Oldham on 1 May 1915.

Touring teams

The record score for a British team touring the Commonwealth is 101 points by England v. South Australia (nil) at Adelaide in May 1914. The record for a Commonwealth touring team in Britain is 92 points (10 goals, 24 tries) by Australia against Bramley's 7 points (2 goals, 1 try) at the Barley Mow Ground, Bramley, near Leeds, on 9 Nov 1921.

Most points Season

Leeds scored a record 1220 points in the 1972-73 season, in all competitive matches.

HIGHEST INDIVIDUAL SCORES**Most points Cup**

George Henry 'Tich' West (1882-1927) of Hull Kingston Rovers scored 53 points (10 goals and 11 tries) in a First Round Challenge Cup-tie v. Brookland Rovers on 4 Mar 1905.

Most points League

Jimmy Lomas (Salford) scored a record 39 points (5 tries, 24 goals) against Liverpool City (78-0) on 2 Feb 1907.

Most points Season

The record number of points in a season was scored by Benjamin Lewis Jones (Leeds) (b. 11 Apr 1931) with 496 (194 goals, 36 tries) in 1956-7. He also scored 9 points in a friendly game. However, including 14 points in friendly games, David Watkins (Salford) (b. 5 Mar 1942) scored 507 points in 1972-3.

Most points Career

Neil Fox (Bradford Northern) scored 6220 points (2575 goals, 358 tries, 4 drop goals) in a senior Rugby League career from 10 Apr 1956 to the end of the 1979-80 season.

Most tries Season

Albert Aaron Rosenfeld (1885-1970) (Huddersfield), an Australian-born wing-threequarter, scored 80 tries in 40 matches in the 1913-14 season.

Most tries Career

Brian Bevan (b. Australia, 24 Apr 1924) a wing-threequarter, scored 796 tries in the 18 seasons (16 with Warrington, two with Blackpool Borough) from 1946 to 1964. He scored 740 for Warrington, 17 for Blackpool and 39 in representative matches.

Most goals Season

The record number of goals in a season is 221 by David Watkins (Salford) in the 1972-3 season. His total was made up in League, Cup, other competitions, and a Salford v. New Zealand match.

Most consecutive scores

David Watkins (Salford) played and scored in every club game during seasons 1972-3 and 1973-4—a total of 92 games contributing 41 tries and 403 goals—a total of 929 points.

Score	Place and Date
Australia won 50-12	Swinton, 9 Nov 1963
Great Britain won 52-20	Wellington, 30 July 1970
Great Britain won 50-15	Leeds, 14 Mar 1959
England won 60-13	St Helens, 28 May 1978
France won 42-13	Marseille, 25 Nov 1951
England won 34-27	Workington, 30 Mar 1933
France won 29-21	Bordeaux, 23 Nov 1947
Other Nationalities won 27-21	Swansea, 31 Mar 1951
Australia won 63-13	Paris, 31 Dec 1933
Australia won 51-19	Wembley, 30 Dec 1933
Australia won 56-6	Brisbane, 2 July 1960
New Zealand won 49-25	Brisbane, 28 June 1952
Australia won 54-21	Sydney, 27 July 1963
France won 31-22	Lyon, 15 Jan 1956

Keith Elwell in action for Widnes in the 1982 Challenge Cup Final at Wembley, when his club Widnes, for whom he has made a record number of successive appearances, drew 14-14 with Hull. (Stewart Kendall, Sportsphoto)



Individual international records

Jim Sullivan (1903-77) (Wigan) played in most internationals (60 for Wales and Great Britain) kicked most goals (160) and scored most points (329).

Mick Sullivan (no kin) (b. 12 Jan 1934) of Huddersfield, Wigan, St Helens and York played in 51 international games for England and Great Britain and scored a record 45 tries.

Most Cup Finals

Eric Batten (Leeds, Bradford Northern and Featherstone Rovers) played in a record eight Cup Finals including war-time guest appearances between 1941 and 1952 and was on four winning sides.

Alex Murphy (b. 22 Apr 1939) (St Helens, Leigh and Warrington) between 1961 and 1974, and Brian Lockwood (b. 8 Oct 1946) (Castleford, Hull Kingston Rovers and Widnes) between 1969 and 1981, have both been in four Challenge Cup-winning sides.

Youngest player

The youngest player in a Cup Final was Reg Lloyd (Keighley) (b. 1 Sept 1919) who was 17 years 249 days when he played at Wembley on 8 May 1937.

Harold Wagstaff (1891-1939) played his first game in Huddersfield's first team at 15 years 175 days. He played for Yorkshire at 17 years 5 months, and for England at 17 years 8 months.

Most durable player

The most appearances for one club is 769 by Jim Sullivan for Wigan, 1921-46. He played a record 921 first class games in all.

Keith Elwell (Widnes) played in 235 consecutive games for his club between 1977 and 1982.

Most and least successful teams

Wigan won 31 consecutive league games from February 1970 to February 1971. Hull FC won all 26 League Division II matches in the 1978-9 season. Doncaster hold the unenviable record of losing 40 consecutive League games from 16 Nov 1975 to 21 Apr 1977.

Record transfer fees

The highest RL transfer fee is £72,500 paid to Wigan for full-back, George H. Fairbairn (b. 27 July 1954) by Hull Kingston Rovers on 7 June 1981.

Greatest crowds

The greatest attendance at any Rugby League match is 102,569 for the Warrington v. Halifax Cup Final replay at Odsal Stadium, Bradford, on 5 May 1954.

Greatest receipts

The highest receipts for a match in the world have been £683,000 for the Hull v. Widnes Final at Wembley on 1 May 1982.

FOOTBALL (RUGBY UNION)

For a more comprehensive survey of world rugby see *The Guinness Book of Rugby Facts and Feats* by Terry Godwin and Chris Rhys, published by Guinness Superlatives Ltd, at £7.95.

Records are determined in terms of present day scoring values, i.e. a try at 4 points; a dropped goal, penalty or goal from a mark at 3 points; and a conversion at 2 points. The actual score, in accordance with which ever of the eight earlier systems was in force at the time, is also given, in brackets.

Origins

Though there are records of a game with many similarities to Rugby dating back to the Roman occupation, the game is traditionally said to have originated from a breach of the rules of the football played in November 1823 at Rugby School by William Webb Ellis (later the Rev) (c. 1807-72). This handling code of football evolved gradually and was known to have been played at Cambridge University by 1839. The Rugby Football Union was founded on 26 Jan 1871.

HIGHEST TEAM SCORES

Internationals

The highest score in any full International was when France beat Spain by 92 points (including 19 tries) to nil on 4 Mar 1979.

The International Championship record is 75 points when Wales beat France at Swansea in 1910 by 59 points (8 goals, 1 penalty goal, 2 tries) to 16 (1 goal, 2 penalty goals and 1 try) (49-14).

The highest aggregate score for any International match between the Four Home Unions is 69 when England beat Wales by 69 points (7 goals, 1 drop goal and 6 tries) to 0 at Blackheath, London in 1881. (Note: there was no point scoring in 1881).

The highest score by any Overseas side in an International in the British Isles is 53 points (7 goals, 1 drop goal and 2 tries) to 0 when South Africa beat Scotland at Murrayfield, Edinburgh, on 24 Nov 1951 (44-0).

Tour match

The record score for any international tour match is 125-0 (17 goals, 5 tries and 1 penalty goal) (103-0) when New Zealand beat Northern New South Wales at Quirindi, Australia, on 30 May 1962.

Match

In Denmark, Comet beat Lindo by 194-0 on 17 Nov 1973. The highest British score is 174-0 by 7th Signal Regiment v. 4 Armoured Workshop, REME, on 5 Nov 1980 at Herford, W. Germany.

Scores of over 200 points have been recorded in school matches, for example Radford School beat Hills Court 214 points (31 goals and 7 tries) to 0 (200-0) on 20 Nov 1886.

Season

The highest number of points accumulated in a season by a rugby club is 1454 points by Pontypridd RFC, Mid Glamorgan, in 1975-6. In 1970-1 Solihull RUFC's 1st XV scored a record 247 tries.

HIGHEST INDIVIDUAL SCORES

Internationals

The highest individual points score in any match between members of the International Board is 24 by William Fergus 'Fergie' McCormick (b. 1940)—1 drop goal, 3 conversions and 5 penalty goals for New Zealand against Wales at Auckland on 14 June 1969.

Ian Scott Smith (Scotland) (1903-72) scored a record six consecutive international tries in 1925; comprised of the last three v. France and two weeks later, the first three v. Wales.



Ollie Campbell for Ireland against France in 1982 when he equalled his own International scoring record for a season. In the previous match he scored an Irish record with all 21 points against Scotland. (Sporting Pictures (UK) Ltd)

The scoring record for an International Championship season is 46 by Seamus Oliver 'Ollie' Campbell (b. 5 Mar 1954) for Ireland in 1980 and in 1982.

The most points scored in an international career is 301 by Andrew Robertson Irvine (Heriots), (b. 16 Sept 1951), 273 for Scotland and 28 for the British Lions from 1973 to 10 July 1982.

Season

The first class rugby scoring record for a season is 581 points by Samuel Arthur Doble (1944-77) of Moseley, in 52 matches in 1971-2. He also scored 47 points for England in South Africa out of season.

Career

William Henry 'Dusty' Hare (b. 29 Nov 1952) of Leicester, scored 4256 points in first class games from 1971-82, comprising 1800 for Nottingham, 1916 for Leicester, 144 for England and 396 in other representative matches.

Match

Jannie van der Westhuizen (S Africa) scored 80 points (14 tries, 9 conversions, 1 dropped goal, 1 penalty goal) for Carnarvon (88) v. Williston (12) at North West Cape, on 11 March 1972.

In a junior house match in February 1967 at William Ellis School, Edgware, Greater London, between Cumberland and Nunn, Thanos Morphitis, 12, contributed 90 points (13 tries and 19 conversions) (77) to Cumberland's winning score.

All-rounder

Canadian international, Barrie Burnham, scored all possible ways—try, conversion, penalty goal, drop goal, goal from mark—for Meralomas v. Georgians (20-11) at Vancouver, BC, on 26 Feb 1966.

Youngest International

Edinburgh Academy pupils Ninian Jamieson Finlay (1858-1936) and Charles Reid (1864-1909) were both 17 years 36 days old when they played for Scotland v. England in 1875 and 1881 respectively. However, as Finlay had one less leap year in his lifetime up to his first cap, the outright record must be credited to him. Daniel Brendan Carroll (b. 17 Feb 1892) was aged only 16 yr 149 days when he played for Australia in the 1908 Olympic Games Rugby tournament—not considered to be a 'full' international.

ALL TIME SCORING RECORDS—AGGREGATE and MARGIN OF VICTORY in the ten annual matches in the 'International Championship'

Note footnote on page 279 on Scoring systems

	Aggregate Record		Record Margin	
	Present Day pts	Value	Present Day pts	Value
England v. Scotland				
Scotland (28) beat England (19) in 1931	57		England (19) beat Scotland (0) in 1924	21
England v. Ireland			England (24) beat Scotland (5) in 1947	21
England (36) beat Ireland (14) in 1938	61		Ireland (22) beat England (0) in 1947	27
England beat Wales by 7 goals, 1 drop goal and 6 tries to nil in 1881	69*		England beat Wales by 7 goals, 1 drop goal and 6 tries to nil in 1881	69
England v. France			England (37) beat France (0) in 1911	44
England (49) beat France (15) in 1907	64		Scotland beat Ireland by 6 goals and 2 tries to nil in 1877	44
Scotland v. Ireland			Scotland (20) beat Wales (0) in 1887	56
Scotland (29) beat Ireland (14) in 1913	51		Scotland (31) beat France (3) in 1912	33
Scotland v. Wales			Wales (29) beat Ireland (0) in 1907	34
Scotland (20) beat Wales (0) in 1887	56		Ireland (24) beat France (0) in 1913	30
Scotland (31) beat France (3) in 1912	41		Wales (47) beat France (5) in 1909	52
Wales (24) beat Ireland (21) in 1979	45			
France (27) beat Ireland (6) in 1964	40			
Wales (49) beat France (14) in 1910	75			

*Point scoring was not introduced until 1886.

Longest lived International

Dr George Harman (1874-1975), who played twice for Ireland in 1899 reached the age of 101 yr 191 days.

County Championships

The County Championships (instituted in 1889) have been won most often by Gloucestershire with 13 titles (1910, 1913, 1920-2, 1930-2, 1937, 1972, 1974, 1975 and 1976). The most individual appearances is 104 by Richard Trickey (Sale) (b. 6 Mar 1945) for Lancashire between 1964 and 1978.

Club Championships

The most outright wins in the RFU Club Competition (John Player Cup, inst. 1971-2) is three by Leicester, 1979-81. Gloucester won in 1972 and 1978 and shared the Cup in 1982.

The most wins in the Welsh Rugby Union Challenge Cup (Schweppes Welsh Cup, inst. 1971-2) is four by Llanelli, 1973-6. The most wins in the Scottish League Division One (inst. 1973-4) is six by Hawick, 1973-4 to 1977-8 and 1981-2.

Seven-a-sides Origins

Seven-a-side rugby dates from 28 Apr 1883 when Melrose RFC Borders in order to alleviate the poverty of a club in such a small town staged a Seven-a-side tournament. The idea was that of Ned Haig, the town's butcher. The popularity of this variation of the game culminated in a world record 20 countries competing in international Seven-a-side tournaments in Hong Kong in 1981 and 1982.

Middlesex Seven-a-sides

The Middlesex Seven-a-sides were inaugurated in 1926. The most successful sides have been Harlequins with eight wins (1926-9, 1933, 1935, 1967, 1978) and Richmond (incl once by their second Seven) (1951, 1953, 1955, 1974-5, 1977, 1979-80).

The only players to be in five winning 'sevens' have been Norman Macleod Hall (1925-73) (St Mary's Hospital 1944, 1946 and Richmond 1951, 1953, 1955), and James Alexander Pirie Shackleton and Iain Hugh Page Laughland both of London Scottish (1960-3, 1965).

Greatest crowd

The record paying attendance is 104,000 for Scotland v. Wales at Murrayfield, Edinburgh, on 1 Mar 1975. Scotland won 12 points to 10.

Highest posts

The world's highest Rugby Union goal posts are 110 ft ½ in 33.54 m high at the Roan Antelope Rugby Union Club, Luanshya, Zambia. The posts at Brixham RFC, Devonshire, are 57 ft 17.37 m high with an additional 1 ft 0.30 m spike.

Longest kicks

The longest recorded successful drop-goal is 90 yd 82 m by Gerald Hamilton 'Gerry' Brand (b. 8 Oct 1906) for South Africa v. England at Twickenham, Greater London, on 2 Jan 1932. This was taken 7 yd 6 m inside the England 'half' 55 yd 50 m from the posts and dropped over the dead ball line.

The place kick record is reputed to be 100 yd 91 m at Richmond Athletic Ground, Greater London, by Douglas Francis Theodore Morkel (b. 1886) in an unsuccessful penalty for South Africa v. Surrey on 19 Dec 1906. This was not measured until 1932.

In the match Bridlington School 1st XV v. an Army XV at Bridlington, Humberside on 29 Jan 1944, Ernie Cooper (b. 21 May 1926), captaining the school, landed a penalty from a measured 81 yd 74 m from the post with a kick which carried over the dead ball line.

Fastest try

The fastest try in an international game was when H. L. 'Bart' Price scored for England v. Wales at Twickenham on 20 Jan 1923 less than 10 sec after kick off.

Most tries

Dan Jones, of Neath, scored a record 73 tries in a season in 1928-

MOST INTERNATIONAL APPEARANCES

The following totals are limited to matches between the seven member countries of the 'International Rugby Football Board' and France. Including 12 appearances for the British Lions, Mike Gibson (b. 3 Dec 1942) has played in 81 international matches. Willie John McBride, MBE (b. Co. Antrim, 6 June, 1940) made a record 17 appearances for the British Lions, as well as 63 for Ireland.

Ireland	69	Cameron Michael Henderson	1964-79
		Gibson	
New Zealand	55	Colin Earl Meads	1967-71
Wales	55	John Peter Rhys 'JPR' Williams	1968-81
France	52	Roland Bertranne	1971-81
Scotland	51	Andrew Irvine	1973-82
England	43	Anthony Neary	1971-80
Australia	39	Peter G. Johnson	1968-72
	39	Gregory Victor Davis	1963-72
South Africa	38	Frederick Christoffel Hendrick	1960-71
		Du Preez	
	38	Jan Hendrik Ellis	1965-76



Roland Bertranne appeared in 66 international matches for France, including a record 52 against other members of the International Board. (Steve Powell, All-Sport)

29. In his last game on 4 May 1979 Andy Hill (b. 17 Jan 1945) scored his 312th try for Llanelli, a British record for one club, since his debut on 3 Nov 1967.

Longest try

The longest 'try' ever executed is by a team of 15, five each from Greenock Wanderers RFC, Hillhead RFC and Glasgow High RFC who scored on 19 Mar 1982 from a 'move' which carried the ball 861.2 miles 1386 km. They started in Greenock on 14 Mar, went east, thence down the east of England to Brighton, and then west to touch down at Cardiff Arms Park. There were no forward passes or knock-ons, and the ball was touched down between the posts in the prescribed manner (Law 12).

GAMBLING

World's biggest win

The world's biggest gambling win is \$5,000,000 in the Lotto lottery by Lou Eisenberg of Brooklyn, New York on 13 Nov 1981.

World's biggest loss

An unnamed Italian industrialist was reported to have lost £800,000 in 5 hr at roulette in Monte Carlo, Monaco on 6 Mar 1974. A Saudi Arabian prince was reported to have lost more than \$1 million in a single session at the Metro Club, Las Vegas, USA in December 1974.

Largest casino

The largest casino in the world is the Resorts International Casino, Atlantic City, NJ, USA, with an annual win in 1979 of \$232,945,748. The Casino comprises 60,000 ft² 5574 m².

SPORTS, GAMES AND PASTIMES

containing 127 gaming tables and 1640 slot machines. Attendances total over 35,000 daily at peak weekends.

BINGO

Origins

Bingo is a lottery game which, as keno, was developed in the 1880s from lotto, whose origin is thought to be the 17th century Italian game *tumbole*. It has long been known in the British Army (called Housey-Housey) and the Royal Navy (called Tombola). The winner was the first to complete a random selection of numbers from 1 to 90. The USA version called Bingo differs in that the selection is from 1 to 75. There are six million players in the United Kingdom.

Largest house

The largest 'house' in Bingo sessions was staged at the Empire Pool, Wembley, London, on 25 Apr 1965 when 10,000 attended.

Earliest and latest Full House

A 'Full House' call occurred on the 15th number by Norman A. Wilson at Guide Post Workingmen's Club, Bedlington, Northumberland on 22 June 1978. 'House' was not called until the 86th number at the Hillsborough Working Men's Club, Sheffield, S. Yorkshire on 11 Jan 1982. There were 32 winners.

Marathon

A session of 265 hr 1 min was held at the Excess Sports and Social Club, Worthing, W. Sussex on 13-14 Sept 1981 with Alan Beech and Jeff McGee calling.

ELECTIONS

The highest ever individual bet was £50,000 on Labour to win the 1964 Election by Sir Maxwell Joseph. He made £37,272 on the odds offered. A bet of £5000 at 200-1 was placed by Frank Egerton in April 1975 that his political Centre Party would win the next General Election. It didn't.

FOOTBALL POOLS

The winning dividend paid out by Littlewoods Pools in their first week in February 1923 was £2 12s 0d (£2.60). In 1980-81 British Football Pools firms had a total record turnover of £387,559,422 of which Littlewoods contributed over two-thirds.

Biggest win

The greatest sum won from the British Pools is £953,874.10 by David Preston, 47, of Burton-on-Trent, Staffs, on 23 Feb 1980. This total comprised £804,573.35 from Littlewoods Pools and £149,300.75 from Vernons Pools.

The odds for selecting 8 draws (if there are only 8 draws) from 55 matches for an all-correct line are 1,217,566.350 to 1 against. (In practice, the approximate odds of winning a dividend of any size on Littlewoods Pools are 80 to 1.)

HORSE RACING

Highest ever odds

The highest recorded odds ever secured were 1,099,299 to 1 by a backer from Otley, West Yorkshire on a seven horse accumulator on 10 May 1975. On a stake of £1.76 in penny bets, he won a total of £12,578.14. The world record odds on a 'double' are 31,793 to 1 paid by the New Zealand Totalisator Agency Board on a five shilling tote ticket on *Red Emperor* and *Maida Dillon* at Addington, Christchurch, in 1951.

Greatest pay-out

A sum of \$382,344 (\$305,876.80 after withholding tax) was won by an unnamed punter from a \$2 ticket for the 'Pick Six' selection of six winners at Hialeah Race Track, Florida, USA on 25 Jan 1982. On 12 Dec 1976 Mr Lim Chooi Seng won Malaysian \$1,112,400 £258,700 on *Freedom Fighter* in the sixth race at Penang.

Biggest tote win

The best recorded tote win was one of £341 2s 6d to 2s (£341.12½ to 10p) representing odds of 3,410¼ to 1, by Catherine Unsworth of Blundellsands, Liverpool at Haydock Park on a race won by *Coole* on 30 Nov 1929. The highest odds in

Gambling/Gliding

Irish tote history were £184 7s 6d on a 2s 6d (£184.37½ to 12½p) stake, viz. 1474 to 1 on *Hillhead VI* at Baldoy on 31 Jan 1970.

Largest bookmaker

The world's largest bookmaker is Ladbroke's of London with turnover from gambling in 1981 of £552 million. The largest chain of betting shops is that of Ladbrokes with 1249 shops in the United Kingdom in 1982.

Topmost tipster

The only recorded instance of a racing correspondent forecasting ten out of ten winners on a race card was at Delaware Park, Wilmington, Delaware, USA on 28 July 1974 by Charles Lane of the *Baltimore News American*.

ROULETTE

The longest run on an ungaffed (i.e. true) wheel reliably recorded is six successive coups (in No. 10) at El San Juan Hotel, Puerto Rico on 9 July 1959. The odds with a double zero wheel in 38° or 3,010,936,383 to 1.

The longest 'marathon' on record is one of 31 days from 10 Apr to 11 May 1970 at The Casino de Macao, to test the validity or invalidity of certain contentions in 20,000 spins.

SLOT MACHINES

The world's biggest slot machine (or one-armed bandit) is *Super Bertha* (555 ft³ 15,71 m³) installed by Si Redd at the Four Queens Casino, Las Vegas, Nevada, USA in September 1970. Once in every 25,000 million plays it may yield \$1 million from a \$10 feed. The biggest beating handed to a 'one-armed bandit' was \$992,012.15, rounded up to 'an even million dollars', by Jeff Randolph from Delano, Cal., USA at Caesars Tahoe Casino, South Lake Tahoe, Nevada, USA on 17 July 1981.

GLIDING

Origins

Emanuel Swedenborg (1688-1772) of Sweden made sketches of gliders c. 1714. The earliest man-carrying glider was designed by Sir George Cayley (1773-1857) and carried his coachman (possibly John Appleby) about 500 yd 457 m across a valley in Brompton Dale, North Yorkshire in the summer of 1853. Gliders now attain speeds claimed at over 200 mph 322 km/h.

Most titles World

The most World individual championships (inst. 1948) won is three by Helmut Reichmann (b. 1942) (W. Germany) in 1970, 1974, 1978 and Douglas George Lee, MBE (GB) (b. 7 Nov 1945) in 1976, 1978 and 1981.

Most titles British

The British national championship (inst. 1939) has been won five times by John Delafield (b. 31 Jan 1938) in 1968, 1972, 1976, 1978 and 1981. The first woman to win this title was Anne Burns (b. 23 Nov. 1915) of Farnham, Surrey on 30 May 1966.

HANG GLIDING

Origins

In the eleventh century the monk, Eilmer, is reported to have flown from the 60 ft 18.3 m tower of Malmesbury Abbey, Wiltshire. The earliest modern pioneer was Otto Lilienthal (1848-96) (Germany) with about 2500 flights in gliders of his own construction between 1891 and 1896. In the 1950s Professor Francis Rogallo of the National Space Agency, USA, developed a flexible 'wing' from his space capsule re-entry researches.

Championships

The World Team Championships, held in 1978, 1979 and 1981 have been won by Great Britain.

Greatest distance

The official FAI record is 118.7 miles 191 km by Helmut Dene (W. Germany) in a Comet 165 from Hippach to Rottenmann, Austria on 20 May 1981. Jim Lee (USA) claimed 168 miles 270 km in California in 1981. The British best is 112 miles 180 km by Bob Calvert in an Airwave Magic II from Sarn Hill, Powys to Hindon, Wiltshire on 15 Apr 1982.

SELECTED WORLD RECORDS (Single-seaters)

Distance 907.7 miles 1460.8 km	Hans-Werner Grosse (W. Germany) in an ASW-12 on 25 Apr 1972 from Lübeck to Biarritz
Declared Goal Flight 779.4 miles 1254.26 km	Bruce Drake, David Speight, S. H. 'Dick' Georgeson (all NZ) all in Nimbus 2s, Te Anau to Te Araroa, 14 Jan 1978
Absolute Altitude 46,266 ft 14 102 m	Paul F. Bickle, Jr (USA) in a Schweizer SGS 1-23E over Mojave, California (released at 3963 ft 1207 m) on 25 Feb 1961 (also record altitude gain—42,303 ft 12 894 m)
Goal and Return 1015.7 miles 1634.7 km	Carl H. Striedleck (USA) in an ASW 17 from Lock Haven, Penn. to Tennessee, on 9 May 1977
Speed over Triangular Course 100 km 102.74 mph 165.35 km/h	Ross Briegleb (USA) in a Kestrel 17 over the USA on 18 July 1974
300 km 98.59 mph 158.67 km/h	Hans-Werner Grosse (W. Germany) in an ASW-17 over Australia on 24 Dec 1980.
500 km 94.00 mph 151.28 km/h	Georg Eckle (W. Germany) in an ASW-17 over South Africa on 10 Dec 1979.
750 km 89.5 mph 144 km/h*	Hans-Werner Grosse (W. Germany) in an ASW-17 over Australia on 6 Jan 1982
1000 km 90.29 mph 145.32 km/h	Hans-Werner Grosse (W. Germany) in an ASW-17 over Australia on 3 Jan 1979
1250 km 82.79 mph 133.24 km/h	Hans-Werner Grosse (W. Germany) in an ASW-17 over Australia on 9 Dec 1980

* awaiting homologation

BRITISH NATIONAL RECORDS¹ (Single-seaters)

589.9 miles 949.47 km	Karla Karel in a LS-3 over Australia on 23 Jan 1980
360 miles 579.36 km	H. C. N. Goodhart in a Skylark 3, Lasham, Hants, to Portmoak, Scotland on 10 May 1955
37,729 ft 11 500 m	H. C. N. Goodhart in a Schweizer 1-23 over California, USA on 12 May 1955
621.9 miles 1000.88 km	William Malpas in a Mini-Nimbus, State College, Pa. to Bluefield, Va., USA on 28 Sept 1981
88.99 mph 143.3 km/h	E. Paul Hodge in a Standard Cirrus over Rhodesia on 30 Oct 1976
91.2 mph 146.8 km/h	Edward Pearson in a Nimbus 2 over S. W. Africa on 30 Nov 1976
81.9 mph 131.9 km/h	Edward Pearson in a Nimbus 2 over Zimbabwe on 5 Nov 1975
68.2 mph 109.8 km/h	Michael R. Carlton in a Kestrel 19 over South Africa on 5 Jan 1975

¹ British National Records may be set up by British pilots in any part of the world.

Greatest ascent and descent

The official FAI height gain record is 4175.76 m 13699.8 ft by Ian Kibblewhite (New Zealand) at Owens Valley, California, USA on 22 July 1981.

GOLF

The Guinness Book of Golf Facts and Feats (2nd edition) by Donald Steel, published by Guinness Superlatives, at £8.95 contains more information on this sport.

Origins

Although a stained glass window in Gloucester Cathedral, dating from 1350 portrays a golfer-like figure, the earliest mention of golf occurs in a prohibiting law passed by the Scottish Parliament in March 1457 under which 'goff be utterly cryit doune and not usit'. The Romans had a cognate game called *paganica* which may have been carried to Britain before AD 400. The Chinese Nationalist Golf Association claim the game is of Chinese origin ('*Ch'ui Wan*—the ball hitting game') in the 3rd or 2nd century BC. There were official ordinances prohibiting a ball game with clubs in Belgium and Holland from 1360. Gutta percha balls succeeded feather balls in 1848 and by 1902 were in turn succeeded by rubber-cored balls, invented in 1899 by Coburn Haskell (USA). Steel shafts were authorised in the USA in 1925 and in Britain in 1929.

Club Oldest

The oldest club of which there is written evidence is the Gentlemen Golfers (now the Honourable Company of Edinburgh Golfers) formed in March 1744—ten years prior to the institution of the Royal and Ancient Club of St Andrews, Fife. However the Royal Burgess Golfing Society of Edinburgh claim to have been founded in 1735.

Club Largest

The club with the highest membership in the British Isles is the Royal and Ancient Golf Club of St Andrews, Fife, Scotland with 1800 members. The largest in England is 1600 at the Moor Park GC, Rickmansworth, Herts., and the largest in Ireland is Royal Portrush, Co. Antrim with 1215 members.

Course Highest

The highest golf course in the world is the Tuctu Golf Club in Morococha, Peru, which is 4369 m 14,335 ft above sea-level at its lowest point. Golf has, however, been played in Tibet at an altitude of over 4875 m 16,000 ft.

The highest golf course in Great Britain is one of nine holes at Leadhills, Strathclyde, 1500 ft 457 m above sea-level.

Course Lowest

The lowest golf course in the world was that of the now defunct

Sodom and Gomorrah Golfing Society at Kallia (Qulya) on the northern shores of the Dead Sea, 380 m 1250 ft below sea-level. Currently the lowest is the par-70 18 hole Furnace Creek Golf Course, Death Valley, California, USA, at an average 220 ft 67 m below sea-level.

Longest hole

The longest hole in the world is the 7th hole (par-7) of the Sano Course, Satsuki GC, Japan, which measures 831 m 909 yd. In August 1927 the sixth hole at Prescott Country Club in Arkansas, USA, measured 838 yd 766 m. The longest hole on a championship course in Great Britain is the sixth at Troon, Strathclyde, which stretches 577 yd 528 m.

Largest green

Probably the largest green in the world is that of the par-6 695 yd 635 m fifth hole at International GC, Bolton, Massachusetts, USA with an area greater than 28,000 ft² 2600 m².

Biggest bunker

The world's biggest bunker (called a trap in the USA) is Hell's Half Acre on the 585 yd 535 m seventh hole of the Pine Valley course, Clementon, New Jersey, USA, built in 1912 and generally regarded as the world's most trying course.

Longest course

The world's longest course is the par-77 8325 yd 7612 m International GC, (see also above), from the 'Tiger' tees, remodelled in 1969 by Robert Trent Jones. Floyd Satterlee Rood used the United States as a course, when he played from the Pacific surf to the Atlantic surf from 14 Sept 1963 to 3 Oct 1964 in 114,737 strokes. He lost 3511 balls on the 3397.7 mile 5468 km trail.

Longest drives

In long-driving contests 330 yd 300 m is rarely surpassed at sea-level. In officially regulated long driving contests over level ground the greatest distance recorded is 392 yd 358 m by William Thomas 'Tommie' Campbell (b. 24 July 1927) (Foxrock Golf Club) made at Dun Laoghaire, Co. Dublin, in July 1964. On an airport runway Valentin Barrios (Spain) drove a Slazenger B51 ball 568½ yd 520 m at Palma, Majorca on 7 Mar 1977. The greatest recorded drive on an ordinary course is one of 515 yd 471 m by Michael Hoke Austin (b. 17 Feb 1910) of Los Angeles, California, USA, in the US National Seniors Open Championship at Las Vegas, Nevada, on 25 Sept 1974. Austin, 6 ft 2 in 1.88 m tall and weighing 210 lb 92.250 kg drove the ball to within a yard of the green on the par-4 450 yd 412 m fifth hole of the Winterwood Course and it rolled 65 yd 59 m past the flag-stick. He was aided by an estimated 35 mph 56 km/h tailwind.

A drive of 2640 yd (1½ miles) 2414 m across ice was achieved by an Australian meteorologist named Nils Lied at Mawson Base,

SPORTS, GAMES AND PASTIMES



There were plenty of gambling connections as Monte Carlo Money used skill as much as luck to shoot a record 58 at Las Vegas on 11 March 1981.

Antarctica, in 1962. Arthur Lynskey claimed a drive of 200 yd 182 m horizontal and 2 miles 3200 m vertical off Pikes Peak, Colorado (14,110 ft 4300 m) on 28 June 1968. On the Moon the energy expended on a mundane 300 yd 274 m drive would achieve, craters permitting, a distance of 1 mile 1.6 km.

Longest putt

The longest recorded holed putt in a major tournament was one of 86 ft 26 m on the vast 13th green at the Augusta National, Georgia by Cary Middlecoff (b. January 1921) (USA) in the 1955 Masters' Tournament. Robert Tyre 'Bobby' Jones Jr (1902-71) was reputed to have holed a putt in excess of 100 ft 30 m at the fifth green in the first round of the 1927 Open at St. Andrews.

SCORES

Lowest 9 holes and 18 holes Men

At least four players are recorded to have played a long course (over 6000 yd 5486 m) in a score of 58, most recently Monte Carlo Money (USA) (b. 3 Dec 1954) the par-72, 6607 yd 6041 m Las Vegas Municipal GC, Nevada, USA on 11 Mar 1981. The lowest recorded score on a long course in Britain is 58 by Harry Weetman (1920-72) the British Ryder Cup golfer, for the 6171 yd 5642 m Croham Hurst Course, Croydon, Surrey, on 30 Jan 1956. Alfred Edward Smith (b. 1903) the Woolacombe professional, achieved an 18-hole score of 55 (15 under bogey 70) on his home course on 1 Jan 1936. The course measured 4248 yd 3884 m. The detail was 4, 2, 3, 4, 2, 4, 3, 4, 3 = 29 out, and 2, 3, 3, 3, 3, 2, 5, 4, 1 = 26 in.

Nine holes in 25 (4, 3, 3, 2, 3, 3, 1, 4, 2) was recorded by A. J. 'Bill' Burke in a round in 57 (32 + 25) on the 6389 yd 5842 m par-71 Normandie course St Louis, Missouri, USA on 20 May 1970. The tournament record is 27 by Mike Souchak (USA) (b. 10 May 1927) for the second nine (par-35) first round of the 1955 Texas Open (see also next column), Andy North (USA) (b. 9 Mar 1950) second nine (par-34), first round, 1975 BC Open at Endicott GC, Endicott, NY and Jose Maria Canizares (Spain) (b. 18 Feb 1947), first nine, third round, in the 1978 Swiss Open on the 6811 yd 6228 m Crans-Sur course.

The United States PGA tournament record for 18 holes is 59 (30 + 29) by Al Geiberger (b. 1 Sept 1937) in the second round of the Danny Thomas Classic, on the 72-par 7249 yd 6628 m Colonial CC course Memphis, Tennessee on 10 June 1977. Three golfers have recorded 59 over 18 holes in non-PGA tournaments; Samuel Jackson Snead (b. 27 May 1912) in the third round of the Sam Snead Festival at White Sulphur Springs, West Virginia, USA on 16 May 1959; Gary Player (South Africa) (b. 1 Nov 1935) in the second round of the Brazilian Open in Rio de

Janeiro on 29 Nov 1974, and David Jagger (GB) (b. 9 June 1940) in a Pro-Am tournament prior to the 1973 Nigerian Open at Ikoyi Golf Club, Lagos.

Lowest 18 holes Women

The lowest recorded score on an 18-hole course (over 6000 yd 5486 m) for a woman is 62 (30 + 32) by Mary 'Mickey' Kallahan Wright (b. 14 Feb 1935) (USA) on the Hogan Park Course (par-71, 6286 yd 5747 m) at Midland, Texas, USA, in November 1964. Wanda Morgan (b. 22 Mar 1910) recorded a score of 60 (31 + 29) on the Westgate and Birchington Golf Club course, Kent, over 18 holes (5002 yd 4573 m) on 11 July 1929.

Lowest 18 holes Great Britain

The lowest score recorded in a first class professional tournament on a course of more than 6000 yd 5486 m in Great Britain is 61 (29 + 32), by Thomas Bruce Haliburton (1915-75) of Wentworth GC in the Spalding Tournament at Worthing, West Sussex, in June 1952, and 61 (32 + 29) by Peter J. Butler (b. 23 Mar 1932) in the Bowmaker Tournament on the Old Course at Sunningdale, Berkshire, on 4 July 1967.

Lowest 36 holes

The record for 36 holes is 122 (59 + 63) by Snead in the 1959 Sam Snead Festival on 16-17 May 1959. Horton Smith (1908-1963), twice US Masters Champion, scored 121 (63 + 58) on a short course on 21 Dec 1928 (see below). The lowest score by a British golfer has been 124 (61 + 63) by Alexander Walter Bann 'Sandy' Lyle (b. 9 Feb 1958) in the Nigerian Open at the 6024 yd 5508 m (par-71) Ikoyi Golf Club, Lagos in 1978.

Lowest 72 holes

The lowest recorded score on a first-class course is 255 (29 under par) by Leonard Peter Tupling (b. 6 Apr 1950) (GB) in the Nigerian Open at Ikoyi Golf Club, Lagos in February 1981, made up of 63, 66, 62 and 64 (average 63.75 per round).

The lowest 72 holes in a US professional event is 257 (60, 68, 64, 65) by Mike Souchak in the 1955 Texas Open at San Antonio.

The lowest 72 holes in an Open championship in Europe is 262 (67, 66, 66, 63) by Percy Alliss (GB) (1897-1975) in the 1932 Italian Open at San Remo, and by Lu Liang Huan (Taiwan) (b. 10 Dec 1935) in the 1971 French Open at Biarritz. Kelvin D. G. Nagle (b. 21 Dec 1920) of Australia shot 261 in the Hong Kong Open in 1961. The lowest for four rounds in a British first class tournament is 262 (66, 63, 66 and 67) by Bernard Hunt in the Piccadilly tournament on the par-68 6184 yd 5655 m Wentworth East Course, Virginia Water, Surrey on 4-5 Oct 1966.

Horton Smith scored 245 (63, 58, 61 and 63) for 72 holes on the 4700 yd 4297 m course (par-64) at Catalina Country Club, California, USA, to win the Catalina Open on 21-23 Dec 1928.

Highest score

The highest score for a single hole in the British Open is 21 by a player in the inaugural meeting at Prestwick in 1860. Double figures have been recorded on the card of the winner only once, when Willie Fernie (1851-1924) scored a ten at Musselburgh, Lothian, in 1883. Ray Ainsley of Ojai, California, took 19 strokes for the par-4 16th hole during the second round of the US Open at Cherry Hills Country Club, Denver, Colorado, on 10 June 1938. Most of the strokes were used in trying to extricate the ball from a brook. Hans Merell of Mogadore, Ohio, took 19 strokes on the par-3 16th (222 yd 203 m) during the third round of the Bing Crosby National Tournament at Cypress Point Club, Del Monte, California, USA, on 17 Jan 1959. It is recorded that Chevalier von Cittern went round 18 holes in 316, averaging 17.55 per hole, at Biarritz, France in 1888. Steven Ward took 222 strokes for the 6212 yd 5680 m Pecos Course, Reeves County, Texas, USA, on 18 June 1976—but he was only aged 3 years 286 days.

Most shots for one hole

A woman player in the qualifying round of the Shawnee Invitational for Ladies at Shawnee-on-Delaware, Pennsylvania, USA, in c. 1912, took 166 strokes for the short 130 yd 118 m 16th hole. Her tee shot went into the Binniekil River and the ball floated. She put out in a boat with her exemplary, but statistically minded husband at the oars. She eventually beached the ball

1½ miles 2.4 km downstream but was not yet out of the wood. She had to play through one on the home run. In a competition at Peacehaven, Sussex, England in 1890, A. J. Lewis had 156 putts on one green without holing out.

Rounds fastest *Individual*

With such variations in lengths of courses, speed records, even for rounds under par, are of little comparative value. Rick Baker completed 18 holes (6142 yd 5616 m) in 26 min 20.55 sec at the Metropolitan Golf Club, Melbourne, Australia, on 14 Feb 1981, during the Victorian Open, but this test permitted the striking of the ball whilst still moving. The record for a still ball is 28.09 min by Gary Shane Wright (b. 27 Nov 1946) at Tewantin-Noosa Golf Club, Queensland, Australia (18 holes, 6039 yd 5522 m) on 9 Dec 1980.

Rounds fastest *Team*

Eighty-three players completed the 18-hole 6421 yd 5871 m Prince George Golf and Country Club course, British Columbia, Canada in 12 min 14.5 sec in 1973, using only one ball.

Rounds slowest

The slowest stroke play tournament round was one of 6 hr 45 min taken by South Africa in the first round of the 1972 World Cup at the Royal Melbourne GC, Australia. This was a four-ball medal round, everything holed out.

Most rounds

The greatest number of rounds played on foot in 24 hr is 22 rounds and five holes (401 holes) by Ian Colston, 35, at Bendigo GC Victoria (par-73, 6061 yd 5542 m) on 27–28 Nov 1971. The most holes played on foot in a week (168 hr) is 1128 by Steve Hylton at the Mason Rudolph Golf Club (6060 yd 5541 m), Clarkesville, Tennessee, USA, from 25–31 Aug 1980.

Most peripatetic golfer

George S. Salter, of Carmel, California, USA has played in 116 different 'countries' around the world from 1964 to 1977.

Throwing the golf ball

The lowest recorded score for throwing a golf ball round 18 holes (over 6000 yd or 5500 m) is 82 by Joe Flynn (USA), 21, at the 6228 yd 5694 m Port Royal Course, Bermuda, on 27 Mar 1975.

CHAMPIONSHIP RECORDS

The Open

The Open Championship was inaugurated in 1860 at Prestwick, Strathclyde, Scotland. The lowest score for 9 holes is 29 by Tom Haliburton (Wentworth) and Peter W. Thomson, CBE (Australia) (b. 23 Aug 1929) at Royal Lytham and St Anne's, Lancashire on 10 July 1963, by Tony Jacklin, OBE (b. 7 July 1944) at St Andrews, Fife, on 8 July 1970 and by Bill Longmuir (b. 10 June 1953) on the Royal Lytham and St Anne's course on 18 July 1979, all in the first round.

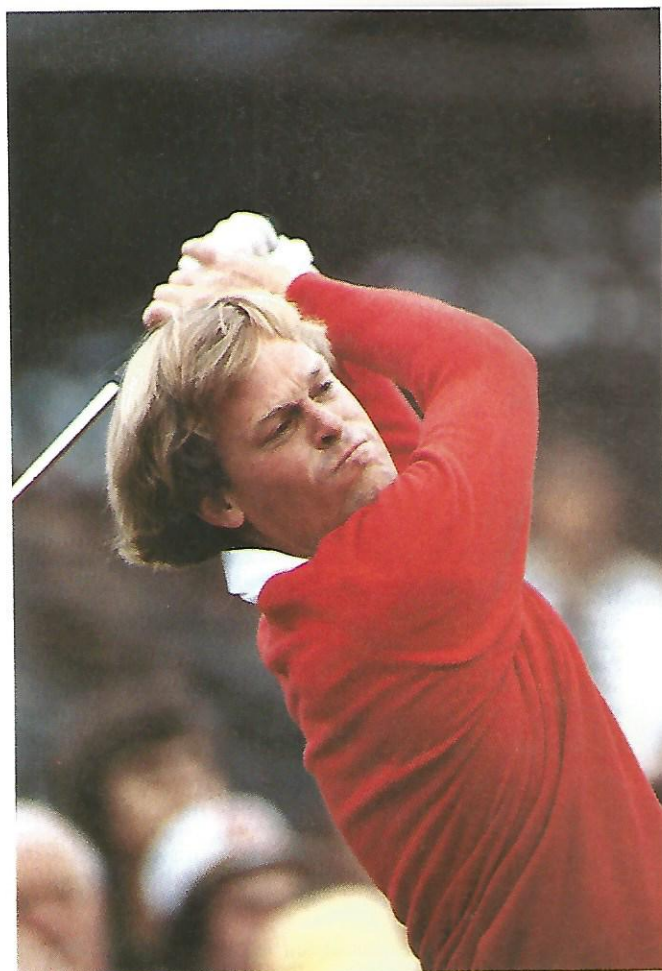
The lowest round in The Open is 63 by Mark Hayes (b. 12 July 1949) (USA) at Turnberry, Strathclyde, on 7 July 1977, and Isao Aoki (b. 31 Aug 1942) (Japan) at Muirfield, East Lothian on 19 July 1980. Thomas Henry Cotton, MBE (b. Holmes Chapel, Cheshire, 26 Jan 1907) at Royal St George's, Sandwich, Kent completed the first 36 holes in 132 (67 + 65) on 27 June 1934. The lowest 72-hole aggregate is 268 (68, 70, 65, 65) by Tom Watson (b. 4 Sept 1949) (USA) at Turnberry, ending on 9 July 1977.

US Open

The United States Open Championship was inaugurated in 1894. The lowest 72-hole aggregate is 272 (63, 71, 70, 68) by Jack Nicklaus (b. 21 Jan 1940) on the Lower Course (7015 yd 6414 m) at Baltusrol Country Club, Springfield, New Jersey, on 12–15 June 1980. The lowest score for 18 holes is 63 by Johnny Miller (b. 29 Apr 1947) on the 6921 yd 6328 m par-71 Oakmont Country Club course, Pennsylvania on 17 June 1973, Jack Nicklaus (see above) and Tom Weiskopf (USA) (b. 9 Nov 1942), both on 12 June 1980.

US Masters'

The lowest score in the US Masters' (instituted on the par-72 6980 yd 6382 m Augusta National Golf Course, Georgia, in 1934) has been 271 by Jack Nicklaus in 1965 and Raymond Floyd (b. 4 Sept 1942) in 1976. The lowest rounds have been 64



Johnny Miller won the world's richest prize at golf in 1982. At the time he stood 15th on the US TPA career winnings table with \$1,531,054. (Steve Powell, All-Sport)

by Lloyd Mangrum (1914–74) (first round, 1940), Jack Nicklaus (third round, 1965), Maurice Bembridge (GB) (b. 21 Feb 1945) (fourth round, 1974), Hale Irwin (b. 3 June 1945) (fourth round, 1975), Gary Player (S. Africa) (fourth round, 1978) and Miller Barber (b. 31 Mar 1931) (second round, 1979).

Amateur

The lowest score for nine holes in the Amateur Championship (inaugurated in 1885) is 29 by Richard Davol Chapman (1911–78) of the USA at Royal St George's, Sandwich, Kent (par-70, 6633 yd 6065 m), on 27 May 1948.

Michael Francis Bonallack, OBE (b. 31 Dec 1934) shot a 61 (32 + 29) on the par-71 6905 yd 6313 m course at Ganton, North Yorkshire, on 27 July 1968 in the first 18 of the 36 holes in the final round of the English Amateur championship.

World Cup (formerly Canada Cup)

The World Cup (instituted as the Canada Cup in 1953) has been won most often by the USA with 15 victories between 1955 and 1979. The only men to have been on six winning teams have been Arnold Palmer (b. 10 Sept 1929) (1960, 1962–4, 1966–7) and Jack Nicklaus (1963–4, 1966–7, 1971 and 1973). Only Nicklaus has taken the individual title three times (1963–4, 1971). The lowest aggregate score for 144 holes is 545 by Australia, Bruce Devlin (b. 10 Oct 1937) and David Graham (b. 23 May 1946), at San Isidro, Buenos Aires, Argentina on 12–15 Nov 1970. The lowest individual score has been 269 by Roberto de Vicenzo (b. Buenos Aires, Argentina, 14 Apr 1923) also in 1970.

Ryder Trophy

The biennial Ryder Cup professional match between USA and the British Isles or Great Britain (Europe in 1979) was instituted in 1927. The USA have won 20½ to 3½ to date. William Earl



Severiano Ballesteros (left) and Jerry Pate (right). Ballesteros had a career record money total of £313,625 on the European circuit and Pate is the youngest player ever to make \$1 million on the US tour, in addition to winning a major tournament by the greatest margin. (*Associated Sports Photography*)

'Billy' Casper (b. San Diego, California, USA, 24 June 1931) has the record of winning most matches in the Trophy with 20 in 1961–75. Christy O'Connor Sr (b. 21 Dec 1924) (GB) played in ten matches up to 1973.

Walker Cup

The USA v. GB series instituted in 1921 (for the Walker Cup since 1922 and now biennially) has been won by the USA 25½–2½ to date. Joseph Boynton Carr (GB&I) (b. February 1922) played in ten contests (1947–67).

Youngest and oldest champions

The youngest winner of The Open was Tom Morris, Jr. (1851–75) at Prestwick, Strathclyde in 1868 aged 17 years 249 days. The youngest winners of The Amateur title were John Charles Beharrell (b. 2 May 1938) at Troon, Strathclyde, on 2 June 1956, and Robert 'Bobby' E. Cole (b. 11 May 1948) (South Africa) at Carnoustie, Tayside, on 11 June 1966, both aged 18 years 1 month. The oldest Open Champion was 'Old Tom' Morris (1821–1908), aged 46 years 99 days when he won at Prestwick in 1867. In recent times the 1967 champion, Roberto de Vicenzo was aged 44 years 93 days. The oldest winner of The Amateur was the Hon Michael Scott (1878–1959) at Hoylake, Merseyside in 1933, when 54 yr 297 days. The oldest United States Amateur Champion was Jack Westland (b. 14 Dec 1904) at Seattle, Washington, on 23 Aug 1952, aged 47 yr 253 days.

Longest span

Jacqueline Ann Mercer (née Smith) (b. 5 Apr 1929) won her first South African title at Humewood GC, Port Elizabeth in 1948, and her fourth title at Port Elizabeth GC on 4 May 1979, 31 years later.

Most club championships

Bernard Charles Cusack (b. 24 Jan 1920) has won a record total of 33 Club championships, including 32 consecutively, at the Naremben GC, Western Australia, between 1943 and 1981. The women's record is 31 by Molly St John Pratt (b. 19 Oct 1912) at the Stanthorpe GC, Queensland, Australia from 1931 to 1979. The British record for amateur club championships is 27 wins between 1925 and 1969 by Eileen Nairn (née Ashton) (1905–81) at the Worsley GC, Manchester. The record for consecutive wins is 22 (1959–80) by Patricia Mary Shepherd (b. 7 Jan 1940) at Turriff GC, Aberdeenshire, Scotland.

Record tie

The longest delayed result in any National Open Championship occurred in the 1931 US Open at Toledo, Ohio. George von Elm (1901–61) and Billy Burke (1902–72) tied at 292, then tied the first replay at 149. Burke won the second replay by a single stroke after 72 extra holes.

Largest tournament

The Dunhill Trophy Open Amateur Championship in Great Britain attracted a record 124,509 competitors in 1981.

Richest prizes

The greatest first place prize money was \$500,000 (total purse \$1,100,000) won by Johnny Miller (b. 29 Apr 1947) at Sun City, Bophuthatswana, S. Africa on 31 Dec 1981–3 Jan 1982. After 72 hole scores of 277 Miller beat Severiano Ballesteros (who won \$160,000) in a play-off. The highest British prize was £25,000 in the John Player Golf Classic at Hollinwell, Nottinghamshire, on 3–6 Sept 1970 won by Christy O'Connor Sr. Probably the greatest prize for one shot was the £50,000 home won by Isao Aoki (Japan) by aceing the 155 yd 142 m second hole in the World Match Play Championship at Wentworth on 12 Oct 1979.

Highest earnings US PGA and LPGA circuits

The all time professional money-winner is Jack Nicklaus who, up to 4 July 1982, has won \$3,972,446. The record for a year is \$530,808 by Tom Watson in 1980. The record for a woman is \$231,000 by Beth Daniel (b. 14 Oct 1956) in 1980. The record career earnings for a woman is \$1,137,663 by Kathy Whitworth (USA) (b. 27 Sept 1939) to 16 May 1982.

Highest earnings European circuit

Bernhard Langer (b. 27 Aug 1957) won a European record £81,036 in 17 Official Money List events in 1981. His overall total for the year was £95,990. The British overall record in a year is £66,060 by 'Sandy' Lyle in 1980.

Most tournament wins

The record for winning tournaments in a single season is 18

MOST TITLES

The most titles won in the world's major championships are as follows:

The Open	Harry Vardon (1870–1937)	6	1896, 1898–9, 1903, 11, 14
The Amateur	John Ball (1861–1940)	8	1888, 90, 92, 94, 99, 1907, 10, 12
US Open	Willie Anderson (1880–1910)	4	1901, 03–5
	Robert Tyre Jones, Jr. (1902–71)	4	1923, 26, 29–30
	William Ben Hogan (b. 13 Aug 1912)	4	1948, 50–1, 53
	Jack William Nicklaus (b. 21 Jan 1940)	4	1962, 67, 72, 80
US Amateur	Robert Tyre Jones, Jr. (1902–71)	5	1924–25, 27–8, 30
PGA Championship (USA)	Walter Charles Hagen (1892–1969)	5	1921, 24–7
	Jack William Nicklaus (b. 21 Jan 1940)	5	1963, 71, 73, 75, 80
Western Championship (USA)	Jack William Nicklaus (b. 21 Jan 1940)	5	1963, 65–6, 72, 75
US Women's Open	Elizabeth 'Betsy' Earle-Rawls (b. 4 May 1928)	4	1951, 53, 57, 60
	'Mickey' Wright (b. 14 Feb 1935)	4	1958–59, 61, 64
US Women's Amateur	Glenna C. Vare (née Collett) (b. 20 June 1903)	6	1922, 25, 28–30, 35
British Women's	Charlotte Cecilia Pitcairn Leitch (1891–1977)	4	1914, 20–1, 26
	Joyce Wethered (b. 17 Nov 1901) (now Lady Heathcoat-Amory)	4	1922, 24–5, 29

Note: Nicklaus is the only golfer to have won five different major titles (The Open, US Open, Masters, PGA and US Amateur titles) twice and a record 19 all told (1959–80). His remarkable record in The US Open is four firsts, eight seconds and two thirds. In 1930 Bobby Jones achieved a unique 'Grand Slam' of the US and British Open and Amateur titles.

(plus one unofficial), including a record 11 consecutively, by John Byron Nelson (b. 4 Feb 1912) (USA), from 8 Mar–4 Aug 1945. Sam Snead won 84 official US PGA Tour events 1936–65, and has been credited with a total 134 tournament victories since 1934. The Ladies PGA record is 83 by Kathy Whitworth from 1962 to June 1982.

Biggest winning margin

The greatest margin of victory in a major tournament is 21 strokes by Jerry Pate (b. 16 Sept 1953) (USA) in the Colombian Open with 262 on 10–13 Dec 1981.

HOLES IN ONE

Longest

The longest straight hole ever holed in one shot is the tenth (447 yd 408 m) at Miracle Hills Golf Club, Omaha, Nebraska, USA by Robert Mitera (b. 1944) on 7 Oct 1965. Mitera stands 5 ft 6 in 1,68 m tall and weighs 165 lb 74,842 kg (11 st 11 lb). He is a two handicap player who can normally drive 245 yd 224 m. A 50 mph 80 km/h gust carried his shot over a 290 yd 265 m drop-off. The longest 'dog-leg' hole achieved in one is the 480 yd 439 m fifth at Hope Country Club, Arkansas by L. Bruce on 15 Nov 1962. The feminine record is 393 yd 359 m by Marie Robie on the first hole of the Furnace Brook Golf Club, Wollaston, Mass., USA, on 4 Sept 1949. The longest hole in one performed in the British Isles is the seventh (par-4, 393 yd 359 m) at West Lancashire GC by Peter Richard Parkinson (b. 26 Aug 1947) on 6 June 1972.

In 1981 *Golf Digest* magazine recorded 35,757 'aces' reported in the US, which averages over 90 per day.

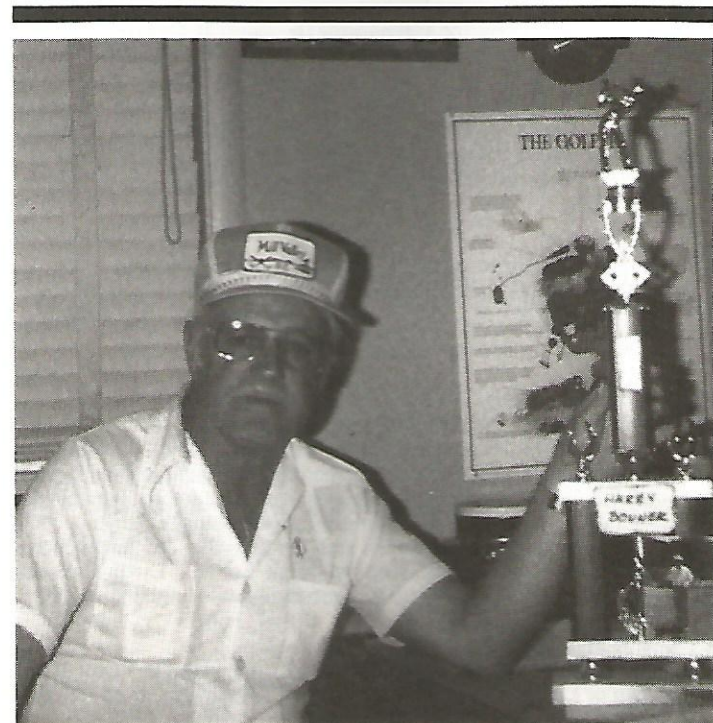
Most

The greatest number of holes-in-one in a career is 57 by Harry Lee Bonner from 1967 to 1982, most at his home 9-hole course of Las Gallinas, San Rafael, California, USA. The British record is 31 by Charles T. Chevalier (1902–73) of Heaton Moor Golf Club, Stockport, Greater Manchester between 20 June 1918 and 1970.

Consecutive

There are at least 15 cases of 'aces' being achieved in two consecutive holes, of which the greatest was Norman L. Manley's unique 'double albatross' on the par-4 330 yd 301 m seventh and par-4 290 yd 265 m eighth holes on the Del Valle Country Club Course, Saugus, California, on 2 Sept 1964. The only woman to

Harry Bonner has made a habit of scoring holes in one, with a peak tally of fifteen in 1981.



record consecutive 'aces' is Sue Prell, on the 13th and 14th holes at Chatswood Golf Club, Sydney, Australia on 29 May 1977.

The closest to achieving three consecutive holes in one was the late Dr Joseph Boydstone on the 3rd, 4th and 9th at Bakersfield GC, California, USA, on 10 Oct 1962 and the Rev Harold Snider (b. 4 July 1900) who aced the 8th, 13th and 14th holes of the par-3 Ironwood course, Arizona, USA on 9 June 1976.

Youngest and oldest

The youngest golfer recorded to have shot a hole-in-one was Coby Orr (5 years) of Littleton, Colorado on the 103 yd 94 m fifth at the Riverside Golf Course, San Antonio, Texas in 1975. The oldest golfers to have performed the feat are (men): 93-year-olds George Henry Miller, on the 116 yd 106 m 11th at Anaheim GC, California on 4 Dec 1970; Charles Youngman, at the Tam O'Shanter Club, Toronto in 1971; and William H. Diddel, on the 142 yd 130 m 8th at the Royal Poinciana GC, Naples, Florida on 1 Jan 1978; (women): Maude Bridget Hutton (b. 7 Apr 1892) when she holed the 102 yd 93 m 14th at Kings Inn Golf and Country Club, Sun City Center, Florida on 7 Aug 1978.

The oldest player to score his age is C. Arthur Thompson (1869–1975) of Victoria, British Columbia, Canada, who scored 103 on the Uplands course of 6215 yd 5682 m aged 103 in 1973.

GREYHOUND RACING

Earliest meeting

In September 1876 a greyhound meeting was staged at Hendon, North London with a railed hare operated by a windlass. Modern greyhound racing originated with the perfecting of the mechanical hare by Owen Patrick Smith at Emeryville, California, USA, in 1919. The earliest greyhound race behind a mechanical hare in the British Isles was at Belle Vue, Manchester, opened on 24 July 1926.

Derby

The only two greyhounds to have won the English Greyhound Derby twice (instituted 1927, now over 500 m 546 yd) are *Mick the Miller* (whelped in Ireland, June 1926 and died 1939) on 25 July 1929, when owned by Albert H. Williams, and on 28 June 1930 (owned by Mrs Arundel H. Kempton), and *Patricia's Hope* on 24 June 1972 (when owned by Gordon and Basil Marks and Brian Stanley) and 23 June 1973 (when owned by G. & B. Marks and J. O'Connor). The highest prize was £35,000 to *Indian Joe* for the Derby on 28 June 1980. The only greyhounds to win the English, Scottish and Welsh Derby 'triple' are *Trev's Perfection*, owned by Fred Trevillion, in 1947, *Mile Bush Pride*, owned by Noel W. Purvis, in 1959, and *Patricia's Hope* in 1972. The only greyhound to win the American Derby, at Taunton, Mass., twice was *Real Huntsman* in 1950–51.

Grand National

The only greyhound to have won the Grand National (inst. 1927 over 525 yd 480 m, now 500 m, and five flights) three times is *Sherry's Prince*, a 75 lb 32 kg dog (whelped in April 1967, died July 1978) owned by Mrs Joyce Mathews of Sanderstead, Surrey, in 1970, 1971 and 1972 when he won by 6¼ lengths.

Fastest greyhound

The highest speed at which any greyhound has been timed is 41.72 mph 67,14 km/h (410 yd 374 m in 20.1 sec) by *The Shoe* on the then straightaway track at Richmond, NSW, Australia on 25 Apr 1968. It is estimated that he covered the last 100 yd 91,44 m in 4.5 sec or at 45.45 mph 73,14 km/h. The highest speed recorded for a greyhound in Great Britain is 39.13 mph 62,97 km/h by *Beef Cutlet*, when covering a straight course of 500 yd 457 m in 26.13 sec at Blackpool, Lancashire, on 13 May 1933.

Fastest speeds for four-bend tracks

The fastest automatically timed speed recorded for a full 4-bend race is 38.89 mph 62,59 km/h at Brighton, E. Sussex by *Glen Miner* on 4 May 1982 with a time of a 29.62 sec for 515 m 563 yd. The fastest over hurdles is 37.64 mph 60.58 km/h at Brighton by *Watchit Buster* on 22 Aug 1978.

Winning streak

The world record is 31 consecutive victories by an American greyhound *Joe Dump* from 18 Nov 1978 to 1 June 1979. *Westpark Mustard*, owned by Mr and Mrs Cyril Scotland, set a British record of 20 consecutive wins between 7 Jan and 28 Oct 1974.

GYMNASTICS**Earliest references**

A primitive form of gymnastics was practised in ancient Greece and Rome during the period of the ancient Olympic Games (776 BC to AD 393) but Johann Friedrich Simon was the first teacher of modern gymnastics at Basedow's School, Dessau, Germany in 1776.

Most titles World

The greatest number of individual titles won by a man in the World Championships is ten by Boris Shakhlin (b. 27 Jan 1932) (USSR) between 1954 and 1964. He also won three team titles. The female record is ten individual wins and five team titles by Larissa Semyonovna Latynina (b. 27 Dec 1934, retired 1966) of the USSR, between 1956 and 1964. Japan has won the men's team title a record five times (1962, 1966, 1970, 1974, 1978) and the USSR the women's team title on seven occasions (1954, 1958, 1962, 1970, 1974, 1978 and 1981).

The most overall titles in Modern Rhythmic Gymnastics is three by Maria Gigova (Bulgaria) in 1969, 1971 and 1973 (shared). Galina Shugurova (USSR) (b. 1955) won eight apparatus titles from 1969-77.

Most titles Olympic

Japan (1960, 1964, 1968, 1972 and 1976) have won the men's team title most often. The USSR have won the women's title

eight times (1952-80). The only men to win six individual medals are Boris Shakhlin (USSR), with one in 1956, four (one shared) in 1960 and one in 1964, and Nikolai Andrianov (USSR) (b. 14 Oct 1952), with one in 1972, four in 1976 and one in 1980.

Vera Caslavskaya-Odlozil (b. 3 May 1942) (Czechoslovakia) won most individual gold medals with seven, three in 1964 and four (one shared) in 1968. Larissa Latynina won six individual gold medals and was in three winning teams in 1956-64 making nine gold medals. She also won five silver and four bronze medals making 18 in all—an Olympic record. The most medals for a male gymnast is 15 by Nikolai Andrianov (USSR), 7 gold, 5 silver and 3 bronze in 1972-80. Alexander Ditiatin (USSR) (b. 1 Aug 1957) is the only man to win a medal in all eight categories at the same Games, with 3 gold, 4 silver and 1 bronze at Moscow 1980.

Highest score Olympics

Nadia Comaneci (b. Romania, 12 Nov 1961) was the first to achieve a perfect score, with seven of 10.00 at the Montreal Olympics in July 1976.

Youngest International

Anita Jokiel (Poland) was aged only 11 years 2 days when she competed at Brighton, East Sussex, on 6 Dec 1977.

Most titles British

The British Gymnastic Championship was won ten times by Arthur John Whitford (b. 2 July 1908) in 1928-36 and 1939. He was also in four winning teams. Wray 'Nik' Stuart, MBE (b. 22 July 1927) equalled the record of nine successive wins, 1956-64. The women's record is eight by Mary Patricia Hirst (b. 18 Nov 1918) (1947, 1949-50 and 1952-6). The most overall titles in Modern Rhythmic Gymnastics is by Sharon Taylor with five successive 1977-81.

Most titles World Cup

In the first World Cup Competition, in London in 1975, Ljudmila Tourischeva (now Mrs Valeriy Borzov) (b. 7 Oct 1952) (USSR) won all five gold medals available.

Rope climbing

The United States Amateur Athletic Union records are time mount to world records: 20 ft 6.09 m (hands alone) 2.8 sec, Don Perry (USA) at Champaign, Illinois, USA, on 3 Apr 1954; 20 ft 7.62 m (hands alone) 4.7 sec, Garvin S. Smith at Los Angeles, California, USA, on 19 Apr 1947.

Chinning the bar

The greatest number of continuous chin-ups (from a dead hang position) is 135 by Joe Hernandez (b. 1961) at Dysart Junior High School, Cashion, Arizona, USA on 22 May 1980. William A. Vaught (b. 1959) performed 20 one-arm (his right) chin-ups at Finch's Gymnasium, Houston, Texas, USA, on 3 Jan 1978. Francis Lewis (b. 1896) of Beatrice, Nebraska, USA in May 1914 achieved seven consecutive chins using only the middle finger of his left hand. His bodyweight was 158 lb 71 kg (71 st 4 lb).

Parallel bar dips

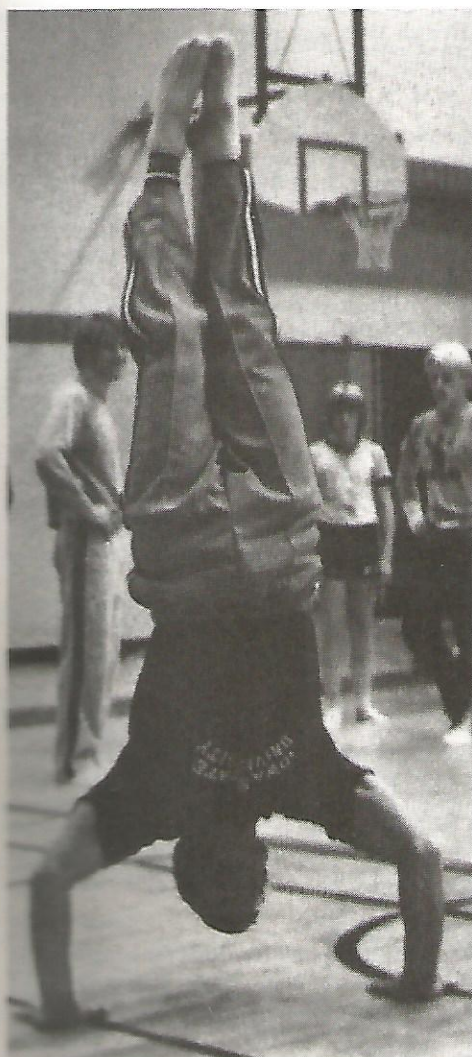
Thomas Gildert (b. 1944) performed a record 533 consecutive parallel bar dips on 1 July 1980 at the Coloroll Leisure Centre, Nelson, Lancashire. Jack La Lanne (b. 1914) is reported to have done 1000, in Oakland, Calif., USA in 1945.

Press-ups (Push-ups)

Colin Hewick (23) did 10,029 consecutive press-ups at the South Holderness Sports Centre, Humberside on 18 July 1982. Paul Henry Allen Lynch, 27, performed 760 one-armed push-ups at the YMCA, Wimbledon, Greater London on 10 June 1982. Noel Barry Mason, did 267 finger tip press-ups on 10 June 1979 at Burton-on-Trent, Staffs. Fred Kueffer did 265 consecutive hand-stand push-ups at Kellogg High School, Little Canada, Minnesota, USA, where he is gymnastic coach, on 10 Nov 1981.

Sit-ups Straight-legged

The greatest recorded number of sit-ups without feet pinned down or knees bent is 27,051 by L/Cpl Micheal Tyne (b. 28 May 1962) at Minley Manor, Hampshire on 5-6 June 1982.



Fred Kueffer, aged 32, displays perfect form on his way to 215 consecutive hand-stand push-ups. He warmed up, immediately prior to the record, by running six miles.

Jumping Jacks

The greatest recorded number of side-straddle hops is 30,000 by Steven Sokol, aged 25, at Oakridge Mall, San Jose, California, USA on 8 May 1982. He took 7 hr 25 min 23 sec.

Vertical jumps

The greatest height in a vertical jump (Sargent Jump) i.e. the differential between the height of the finger-tip reach static and in jumping is 48 in 1.22 m by Darrell Griffith (USA) of the University of Louisville, in 1976. Olympic Pentathlon champion Mary Peters MBE (GB) (b. 6 July 1939) is reported to have done 30 in 76.2 cm in California in 1972.

Somersaults

Ashrita Furman performed 6,773 forward rolls over 10 miles 16.09 km in Central Park, New York, USA on 19 Nov 1980. Corporal Wayne Wright of the Royal Engineers, made a successful dive and tucked somersault over 37 men at Old Park Barracks, Dover, Kent on 30 July 1980. Shigeru Iwasaki (b. 1960) backwards somersaulted over 50 m 54.68 yd in 10.8 sec at Tokyo, Japan on 30 Mar 1980.

Largest gymnasium

The world's largest gymnasium is Yale University's nine-storey, Payne Whitney Gymnasium at New Haven, Connecticut, USA, completed in 1932 and valued at \$18,000,000 £10,285,000.

Largest crowd

The largest recorded crowd was approximately 18,000 people who packed the Forum, Montreal, Canada, for the final of the women's individual apparatus competitions at the XXI Olympic Games on 22 July 1976. Comparable audiences are reported for the Shanghai Stadium, People's Republic of China.

HANDBALL

Origins

Handball, similar to association football, with hands substituted for feet, was first played c. 1895. It was introduced into the Olympic Games at Berlin in 1936 as an 11-a-side outdoor game with Germany winning, but when re-introduced in 1972 it was an indoor game with seven-a-side, the standard size of team since 1952.

By 1980 there were 75 countries affiliated to the International Handball Federation (founded 1946), and an estimated ten million participants. The earliest international match was when Sweden beat Denmark on 8 Mar 1935.

Olympic titles

The most victories in Olympic competition have been those by the USSR in winning the men's and women's titles at Montreal, Canada in 1976, and the women's title at Moscow in 1980.

World titles

The most victories won in World championship (inst. 1938) competition are by Romania with four men's and three women's titles from 1956 to 1974.

Super Cup

The Super Cup is contested by men's Olympic and World Champions. First held in 1979, West Germany and the USSR have each won once.

HANDBALL (COURT)

Origins

Handball played against walls or in a court is a game of ancient Celtic origin. In the early 19th century only a front wall was used but gradually side and back walls were added. The earliest international contest was in New York City, USA, in 1887 between the champions of the USA and Ireland. The court is now a standardised 60 ft 18 m by 30 ft 9 m in Ireland, Ghana and Australia, and 40 ft 12 m by 20 ft 6 m in Canada, Mexico and the USA. The game is played with both a hard and soft ball in Ireland and soft ball only in Australia, Canada, Ghana, Mexico and the USA.

Championships

World championships were inaugurated in New York in October 1964 with competitors from Australia, Canada, Ireland, Mexico and the USA. The most wins have been two by the USA in 1964 and 1967 (shared with Canada).

Most titles

The US Championship 4-wall singles has been won six times by Jimmy Jacobs (b. 1931) in 1955-7, 1960, 1964-5. He also shared in six doubles titles, 1962-3, 1965, 1967-8, 1975. Fred Lewis also won six singles titles, 1972, 1974-6, 1978, 1981.

HARNESS RACING

Origins

Trotting races were held in Valkenburg, Netherlands in 1554. In England the trotting gait (the simultaneous use of the diagonally opposite legs) was known in the 16th century. The sulky first appeared in harness racing in 1829. Pacers thrust out their fore and hind legs simultaneously on one side.

Most successful driver

The most successful sulky driver in North American harness racing history has been Herve Filion (b. 1 Feb 1940) of Quebec, Canada who reached a record 7956 wins and \$35.9 million in purse money by the end of the 1981 season. He won his eleventh North American championship in 1980. The most wins in a year is 637 by Herve Filion in 1974. The greatest earnings in a year is \$4,065,608 by William O'Donnell in 1981.

Highest price

The highest price paid for a trotter is \$4 million for *Incredible Nevele* by Stoner Creek Stud and Castleton Farm of Kentucky from Nevele Holiday Stable Inc. of New York. The highest price ever paid for a pacer is \$8.25 million for *Merger* by Finder/Guida of New York from John Campbell, David Morisey and Peter Oud of Canada in 1982.

Greatest winnings

The greatest amount won by a trotting horse is \$1,960,986 by *Ideal du Gazeau* (France) to the end of 1981. The record for a pacing horse is \$2,019,213 by *Niatross* (USA) in just two years, 1979 and 1980. The greatest amount won by a harness horse in a single season is \$1,414,313 by *Niatross* (USA) in 1980.

The largest ever purse was \$2,011,000 for the Woodrow Wilson Two-year-old race at Meadowlands, New Jersey on 6 Aug 1980, of which a record \$1,005,000 went to the winner *Land Grant*, driven by Del Insko.

HARNESS RACING RECORDS AGAINST TIME

TROTTING

World (mile track)	1:54.8
	1:54.8
World race record (mile)	1:54.8
British record (mile)	2:06.8

PACING

World (mile track)	1:49.2
World race record (mile)	1:52.2
British record (mile)	2:04.3

Nevele Pride (driver, Stanley Dancer) (US) at Indianapolis, Indiana
Lindy's Crown (driver, Howard Beissinger) (US) at Du Quoin, Illinois
Lindy's Crown (driver, Howard Beissinger) (US) at Du Quoin, Illinois
Ted Trot (driver, John Blisset) at Chasewater, West Midlands

31 Aug 1969
 30 Aug 1980
 30 Aug 1980
 21 June 1975

Niatross (driver, Clint Galbraith) (US) at Lexington, Kentucky
Niatross (driver, Clint Galbraith) (US) at Inglewood, California
Bomber (driver, Trevor Brown) at York

1 Oct 1980
 15 Nov 1980
 6 July 1978

HOCKEY

MEN

Origins

A representation of two players with curved snagging sticks apparently in an orthodox 'bully' position was found in Tomb No. 17 at Beni Hasan, Egypt and has been dated to c. 2050 BC. There is a British reference to the game in Lincolnshire in 1277. The English Hockey Association was founded at Cannon Street Hotel, City of London on 16 Apr 1875. The Fédération Internationale de Hockey was formed on 7 Jan 1924.

The first organised club was the Blackheath Rugby and Hockey Club founded in 1861. The oldest club with a continuous history is Teddington HC formed in the autumn of 1871. They played Richmond on 24 Oct 1874 and used the first recorded circle *versus* Surbiton at Bushey Park on 9 Dec 1876. The first international match was the Wales *v.* Ireland match at Rhyd on 26 Jan 1895. Ireland won 3-0.

Most Olympic medals

The Indians were Olympic Champions from the re-inception of Olympic hockey in 1928 until 1960, when Pakistan beat them 1-0 at Rome. They had their eighth win in 1980. Of the six Indians who have won three Olympic team gold medals two have also won a silver medal—Leslie Walter Claudius (b. 25 Mar 1927) in 1948, 1952, 1956 and 1960 (silver) and Udhm Singh (b. 4 Aug 1928) in 1952, 1956, 1964 and 1960 (silver).

World Cup

Instituted in 1971, Pakistan have won most World Cups with three, 1971, 1978 and 1982.

Highest international score

The highest score in international hockey was when India defeated the United States 24-1 at Los Angeles, California, USA, in the 1932 Olympic Games. The greatest number of goals in a home international match was when England defeated France 16-0 at Beckenham on 25 Mar 1922.

Most international appearances

Avtar Singh Sohail (b. 22 Mar 1938) represented Kenya 167 times between 1957 and 1972. The most by a home countries player is 139 by H. David Judge (b. 19 Jan 1936) with 124 for Ireland and 15 for Great Britain from 1957 to 1978.

Ireland	124	H. David Judge	1957-78
Wales	100	D. Austin Savage (b. 15 Dec 1940)	1962-81
Scotland	78	Christopher Sutherland (b. 6 Dec 1949)	1969-81
England	73	Bernard J. Cotton (b. 30 June 1948)	1970-78
Great Britain	56	John W. Neill (England) (b. 15 May 1934)	1959-68

Greatest scoring feats

The greatest number of goals scored in international hockey is 150 by Paul Litjens (Netherlands) (b. 9 Nov 1947) in 112 games to April 1979. M. C. Marckx (Bowdon 2nd XI) scored 19 goals against Brooklands 2nd XI (score 23-0) on 31 Dec 1910. He was selected for England in March 1912 but declined due to business priorities. Between 1923 and 1958, Fred H. Wagner scored 1832 goals for Beeston HC, Nottingham Casuals and the Nottinghamshire county side. David Ashman has scored 1380 goals for one club, Hamble Old Boys, Southampton from 1958 to 1982.

The fastest goal in an international was in 7 sec by John French for England *v.* W. Germany at Nottingham, on 25 Apr 1971.

Greatest goalkeeping

Richard James Allen (b. 4 June 1902) (India) did not concede a goal during the 1928 Olympic Tournament and only a total of three in the following two Olympics of 1932 and 1936. In these three games India scored a total of 102 goals.

Longest game

The longest international game on record was one of 145 min (into the sixth period of extra time), when Netherlands beat Spain 1-0 in the Olympic tournament at Mexico City on 25 Oct 1968. The longest recorded club match occurred in the Hong Kong Hockey Association Holland Cup semi-final between HKFC 'C' and Prisons Sports Dept HC on 11 Mar 1979 which

ended at 2-2 at full time. After 20 min of extra time, it took 115 min of 'sudden death' play before the Football Club scored.

WOMEN

Origins

The earliest women's club was East Molesey in Surrey, England formed in c. 1887. The Wimbledon Ladies Hockey Club, founded one year later, is still in existence. The first national association was the Irish Ladies' Hockey Union founded in 1894. The All England Women's Hockey Association held its first formal meeting in Westminster Town Hall, London, on 23 Nov 1895. The first international match was an England *v.* Ireland game in Dublin in 1896. Ireland won 2-0. The first IFWHA Championship Tournament of 21 nations was at Edinburgh, Scotland in 1975, when England won the Silver Quail.

Most international appearances

Wales	138	Ann Ellis, MSE (b. 21 Sept 1940)	1963-80
England	120	Valerie Robinson	1963-82
Scotland	63	Margaret Brown (b. 7 June 1946)	1967-79
Ireland	55	Marie Bartlett (b. 7 Aug 1945)	1969-81

Highest scores

The highest score in a women's international match was when England beat France 23-0 at Merton, Greater London, on 3 Feb 1923. In club hockey, Ross Ladies beat Wyeseide, at Ross-on-Wye, Herefordshire, 40-0 on 24 Jan 1929, when Edna Mary Blakelock (b. 22 Oct 1904) scored a record 21 goals.

Highest attendance

The highest attendance at a women's hockey match was 65,165 for the match between England and the USA at the Empire Stadium, Wembley, London, on 11 Mar 1978.

Marathon

Two teams of eleven from Epsom Girls Grammar School, Auckland, NZ played for 35 hr 3 min 50 sec on 21-22 Apr 1980.

HORSE RACING

Origins

Horsemanship was an important part of the Hittite culture of Anatolia, Turkey dating from 1400 BC. The 33rd ancient Olympic Games of 648 BC in Greece featured horse racing. The earliest horse race recorded in England was one held in about AD 210 at Netherby, Cumbria, among Arabians brought to Britain by Lucius Septimius Severus (AD 146-211), Emperor of Rome.

Racecourse Largest

The world's largest racecourse is at Newmarket. It now comprises the Rowley Mile Course and the July Course, whose grandstands are about a mile apart, although a portion of the course is common to both. The Beacon Course of 4 miles 397 yd 6,80 km, is no longer in use. The course, mainly unfenced, is situated in the middle of Newmarket Heath, c 2500 acres, the largest turfed training area in the world. The world's largest grandstand was opened in 1968 at Belmont Park, Long Island, NY, USA at a cost of \$30,700,000 £12.8 million. It is 110 ft 33 m tall, 440 yd 402 m long, contains 908 pari-mutuel windows and seats 30,000.

Largest prizes

The richest race ever held is the All-American Futurity, a race for quarter-horses over 440 yd 402 m (400 yd 366 m before 1973) at Ruidoso Downs, New Mexico, USA. The prizes in 1981 totalled \$1,530,000. The richest first prize for any horse race was \$600,000 won by *John Henry*, ridden by Willie Shoemaker, in the Arlington Million, Chicago, USA, on 30 Aug 1981.

Longest race

The longest recorded horse race was one of 1200 miles 1925 km in Portugal, won by a horse *Emir* bred from Egyptian-bred Blunt Arab stock. The holder of the world record for long distance racing and speed is *Champion Crabbet*, who covered 300 miles 482 km in 52 hr 33 min carrying 17½ st 111,130 kg, in 1920.

Horse Racing

Most runners

The most horses in a race is 66 in the Grand National of 22 Mar 1929. The record for the flat is 58 in the Lincolnshire Handicap on 13 Mar 1948. The most runners at a meeting were 214 (flat) in seven races at Newmarket on 15 June 1915 and 229 (National Hunt) in eight races at Worcester on 13 Jan 1965.

Dead heats

There is no recorded case in turf history of a quintuple dead heat. The nearest approach was in the Astley Stakes, at Lewes, Sussex, on 6 Aug 1880 when *Mazurka*, *Wandering Nun* and *Scobell* triple dead-heated for first place a head in front of *Cumberland* and *Thora*, who dead-heated for fourth place. Each of the five jockeys thought he had won. The only three known examples of a quadruple dead heat were between *Honest Harry*, *Miss Decoy*, *Young Daffodil* and *Peteria* at Bogside, on 7 June 1808, between *Defaulter*, *The Squire of Malton*, *Reindeer* and *Pulcherima* in the Omnibus Stakes at The Hoo, Hertfordshire, on 26 Apr 1851, and between *Overreach*, *Lady Golightly*, *Gamester* and *The Unexpected* at Newmarket on 22 Oct 1855. Since the introduction of the photo-finish, the highest number of horses dead-heating has been three, on several occasions.

Horse most successful

The horse with the best win-loss record was *Kincsem*, a Hungarian mare foaled in 1874, who was unbeaten in 54 races (1876-9), including the Goodwood Cup of 1878. *Camarero*, foaled in 1951, won his first 56 races from 19 Apr 1953 to 17 Aug 1955. He died 'from a colic' on 26 Aug 1956, the day after his 73rd win in 77 starts.

Triple Crown Winners

The English 'Triple Crown' (2000 Guineas, Derby, St Leger) has been won 15 times, most recently by *Nijinsky* in 1970. The American 'Triple Crown' (Kentucky Derby, Preakness Stakes, Belmont Stakes) has been achieved 11 times, most recently by *Affirmed* in 1978.

Horse Highest price

The most expensive horse ever is the 1969 All-American Futurity winner *Easy Jet* (foaled 1967). It was reported in October 1980 that he had been syndicated for \$30 million, in 50 shares of \$600,000 each. The highest price paid for a yearling is \$4.25 million for a colt by *Nijinsky*—*Spearfish*, on 19 July 1982 at Keeneland, Kentucky, USA, by Robert Sangster.

Horse Greatest winnings

The greatest amount ever won by a horse is \$3,371,610 by the gelding *John Henry* (foaled 1975) from 1977 to June 1982. The leading money-winning mare is *Dahlia* (foaled 1970) who, from 1972 to 1976, earned \$1,535,443. The most won in a year is \$1,798,030 by *John Henry* in 1981.

Jockey Wins on one card

The most winners ridden on one card is eight by Hubert S. Jones, 17, from 13 rides at Caliente, Cal., USA on 11 June 1944, by Oscar Barattuci, at Rosario City, Argentina, on 15 Dec 1957 and by Dave Gall, from ten rides at Cahokia Downs, East St Louis, Illinois, USA on 18 Oct 1978. The longest winning streak is 12 by Sir Gordon Richards (b. 5 May 1904) (one race at Nottingham on 3 Oct, six out of six at Chepstow on 4 Oct and the first five races next day at Chepstow) in 1933.

Jockey Youngest and oldest

The youngest jockey was Australian-born Frank Wootton (1893-1940) (English champion jockey 1909-12), who rode his first winner in South Africa aged 9 years 10 months. The oldest jockey was Levi Burlingame (USA), who rode his last race at Stafford, Kansas, in 1932 aged 80.

Jockey Lightest

The lightest recorded jockey was Kitchener (d. 1872), who won the Tradesmen's Plate (Chester Cup) on *Red Deer* in 1844 at 3 st 7 lb 22,226 kg. He was said to have weighed only 2 st 7 lb 15,875 kg in 1840.

Jockey Most successful

The most successful jockey of all time has been William Lee 'Willie' Shoemaker (USA) (b. weighing 2½ lb 1,133 kg, nr



John Henry, the greatest ever money winning horse, with his jockey Willie Shoemaker, the greatest ever money winning jockey, in the unsaddling ring after their win in the Arlington Million in 1981. (Gerry Cranham)

Fabens, Texas 19 Aug 1931) now weighing 94 lb 43 kg and standing 4 ft 11 in 1,50 m. From March 1949 to 6 June 1982 he has ridden 8136 winners from 35,369 mounts earning \$87,951,800.

The greatest amount ever won by any jockey in a year is \$8,398,604 by Chris McCarron (USA) (b. 1955) in 1981. The most winners ridden in a year is 546, from a record 2199 mounts, by Chris McCarron in 1974.

Trainers

The greatest number of wins by a trainer in one year is 494 by Jack Van Berg (USA) in 1976. The greatest amount won in a year is \$3,953,906 by Charles Whittingham (USA) in 1981.

Owners

The most winners in a year by an owner is 494 by Dan R. Lasater (USA) in 1974 when he also won a record \$3,022,960 in prize money.

BRITISH TURF RECORDS

Horses Most successful

Eclipse (foaled 1764) still has the best win-loss record, being unbeaten in a career of 18 races between May 1769 and October 1770. As the 1000 Guineas and the Oaks are restricted to fillies, only they can possibly win all five classics. *Sceptre* came closest in 1902 when she won the 2000 Guineas, 1000 Guineas, Oaks and St Leger. In 1868 *Formosa* won the same four but dead-heated in the 2000 Guineas. The most races won in a season is 23 by three-year-old *Fisherman* in 1856. *Catherina* (foaled 1830) won a career record 79 out of 176 races, 1832-41. The only horse to win the same race in seven successive years was *Doctor Syntax* (foaled 1811) in the Preston Gold Cup (1815-21). The most successful sire was *Stockwell* (foaled 1849) whose progeny won 1153 races (1858-76) and in 1866 set a record of 132 races won. The greatest amount ever won by an English-trained horse is £450,428 by *Troy* (foaled 1976) in 1978-9 and by a filly, £281,379 by *Mrs Penny* (foaled 1977) in 1979-81.

Horses Oldest winners

The oldest horse to win a flat race was *Marksman*, aged 18 when he won at Ashford, Kent in 1826. Also aged 18, *Sonny Somers* became the oldest horse to win over jumps at Lingfield Park, Surrey on 28 Feb 1980.

Jockeys Most successful

Sir Gordon Richards won 4870 races from 21,834 mounts from his first mount at Lingfield on 16 Oct 1920 to his last at Sandown on 10 July 1954. His first win was on 31 Mar 1921. In 1953, at his 28th and final attempt, he won the Derby, six days after his knighthood. In 1947 he won a record 269 races. He was champion jockey a record 26 times between 1925 and 1953. The most classic races won by a jockey is 27 by Francis 'Frank' Buckle (1766-1832), between 1792 and 1827.

Trainers Most successful

The record first-prize money earned in a season is £831,964 by

times between 1924 and 1952. The record for a season was set by H H Aga Khan IV, whose horses won £441,655 in prize money in 1981. The most wins in a season is 115 by Cecil Robinson in 1973. The most English classics won is 20 by the Duke of Grafton, KG (1760-1844), from 1813 to 1831.

THE DERBY

For more details see *Derby 200* by Michael Seth-Smith and Roger Mortimer, published by Superlatives Ltd. (price £5.95).

The greatest of England's five classics is the Derby Stakes, inaugurated on 4 May 1780, and named after the 12th Earl of Derby (1752-1834). The distance was increased in 1784 from a mile to 1½ miles 2414 m. The race has been run at Epsom Downs, Surrey, except for the two war periods, when it was run at Newmarket, and is for three-year-olds only. Since 1884 the winners have been: colts 9 st 57 kg 152, fillies 8 st 9 lb 54 kg 884. Colts were eligible until 1904.

Largest and smallest winning margins

Shergar won the Derby by a record ten lengths in 1981. There have been two dead-heats: in 1828 when *Cadland* beat *Colonel* in the run-off, and in 1884 between *St Gatien* and *Westminster* (stakes divided).

Longest and shortest odds

Three winners have been returned at odds of 100-1: *Julian* (1898), *Signorinetta* (1908) and *Aboyeur* (1913). The shortest priced winner was *Ladas* (1894) at 2-9 and the hottest favourite was *Surefoot*, fourth at 40-95 in 1890.

Largest prize

The richest prize on the British Turf was £166,820 in the Derby, won by *Henbit*, ridden by William 'Willie' Plummer Carson (b. 16 Nov 1942), owned by Mme Arpad Plesch and trained by William Richard 'Dick' Hern, on 4 June 1980.

NATIONAL HUNT

For more details see *The Guinness Guide to Steeplechasing* by Gerry Cranham, Richard Newnes and John Oaksey, published by Guinness Superlatives Ltd. (price £11.95).

Horse Greatest winnings

The greatest amount earned by a British-trained jumper was £178,135 by dual champion hurdler *Night Nurse* (foaled 1950) at the end of 1981-2.

Horses most successful

Triple champion hurdler *Sir Ken* (foaled 1947) won a record 16 hurdle races in succession, April 1951 to March 1953. *Blackmore* (foaled 1914) also won 16 races in succession under NH rules, Jan-Nov 1925.

Jockeys Most successful

The only National Hunt jockey to reach 1000 wins is Billy Mellor, MBE (b. Manchester, 10 Apr 1937). This he achieved in 1982.

Dick Saunders rides *Grittar* in the 1982 Grand National. The oldest ever winning jockey, he had had only five previous rides in the season, and retired after his success. (*Sporting Pictures (UK) Ltd*)

Dick Hern in 1980. The most classics won by a trainer is 41 by John Scott (1794-1871) of Malton, Yorkshire in 1827-62. Alec Taylor of Manton, Wiltshire headed the trainers' list for a record 12 seasons between 1907 and 1925. In 1867 John Day of Danebury, Hampshire won 146 races.

Owners Most successful

H H Aga Khan III (1877-1957) was leading owner a record 13



Time Charter, ridden by Billy Newnes, (left) storms through on the right to win the 2000 Guineas in a record time in 1982. (*Gerry Cranham*)

MAJOR RACE RECORDS

Race	Record Time	Jockey	Trainer	Owner	Largest Field
FLAT					
Derby (1780) 1½ miles 2414 m Epsom	2 min 33.8 sec <i>Mahmoud</i> 1936	8—Lester Piggott OBE 1954, 57, 60, 68, 70, 72, 76, 77	7—Robert Robson 1793, 1802, 09, 10, 15, 17, 23 7—John Porter 1868, 82, 83, 86, 90, 91, 99 7—Fred Darling 1922, 25, 26, 31, 38, 40, 41	5—3rd Earl of Egremont 1782, 1804, 05, 07, 26 5—H. H. Aga Khan III 1930, 35, 36, 48, 52	34 (1862)
1000 Guineas (1814) 1 mile 1609 m Newmarket	1 min 37 sec <i>Camarée</i> 1950	7—George Fordham 1859, 61, 65, 68, 69, 81, 83	8—Robert Robson 1819, 20, 21, 22, 23, 25, 26, 27	8—4th Duke of Grafton 1819, 20, 21, 22, 23, 25, 26, 27	29 (1926)
2000 Guineas (1809) 1 mile 1609 m Newmarket	1 min 35.8 sec <i>My Babu</i> 1948	9—Jem Robinson 1825, 28, 31, 33, 34, 35, 36, 47, 48	5—Fred Darling 1925, 31, 38, 42, 47	5—4th Duke of Grafton 1820, 21, 22, 26, 27 5—5th Earl of Jersey 1831, 34, 35, 36, 37	28 (1930)
Oaks (1779) 1½ miles 2414 m Epsom	2 min 34.21 sec <i>Time Charter</i> 1982	9—Frank Buckle 1797, 98, 99, 1802, 03, 05, 17, 18, 23	8—Alec Taylor 1910, 17, 18, 19, 21, 22, 25, 26	6—4th Duke of Grafton 1813, 15, 22, 23, 28, 31	26 (1848)
St Leger (1776) 1 m 6 f 127 yd 2932 m Doncaster	3 min 01.6 sec <i>Coronach</i> 1926 <i>Windsor Lad</i> 1934	9—Bill Scott 1821, 25, 28, 29, 38, 39, 40, 41, 45	16—John Scott 1827, 28, 29, 32, 34, 38, 39, 40, 41, 45, 51, 53, 56, 57, 59, 62	7—9th Duke of Hamilton 1786, 87, 88, 92, 1808, 09, 14	30 (1825)
King George VI and Queen Elizabeth Stakes (1951) 1½ miles 2414 m Ascot	2 min 26.98 sec <i>Grundy</i> 1975	6—Lester Piggott 1965, 66, 69, 70, 74, 77	3—Vincent O'Brien 1958, 70, 77 3—Noel Murless 1966, 67, 68 3—Dick Hern 1972, 79, 80	2—Nelson Bunker Hunt 1973, 74	19 (1951)
Prix de l'Arc de Triomphe (1920) 2400 metres 1 mile 864 yd Longchamp	2 min 28 sec <i>Detroit</i> 1980	4—Jacques Doyasbère 1942, 44, 50, 51 4—Frédéric Head 1966, 72, 76, 79	4—Charles Semblat 1942, 44, 46, 49	6—Marcel Boussac 1936, 37, 42, 44, 46, 49	30 (1967)
VRC Melbourne Cup (1861) 3200 metres 1 mile 1739 yd Flemington, Victoria	3 min 19.1 sec <i>Rain Lover</i> 1968	4—Bobby Lewis 1902, 15, 19, 27 4—Harry White 1974, 75, 78, 79	7—Bart Cummings 1965, 66, 67, 74, 75, 77, 79	4—Etienne de Mestre 1861, 62, 67, 78	39 (1890)
Kentucky Derby (1875) 1¼ miles 2012 m Churchill Downs	1 min 59.4 sec <i>Secretariat</i> 1973	5—Eddie Arcaro 1938, 41, 45, 48, 52 5—Bill Hartack 1957, 60, 62, 64, 69	6—Ben Jones 1938, 41, 44, 48, 49, 52	8—Calumet Farm 1941, 44, 48, 49, 52, 57, 58, 68	23 (1974)
NATIONAL HUNT					
Grand National (1839) 4½ miles 7242 m Liverpool	9 min 01.9 sec <i>Red Rum</i> 1973	5—George Stevens, 1856, 63, 64, 69, 70	4—Aubrey Hastings, 1906, 15, 17, (at Gatwick), 24 4—Fred Rimell, 1956, 61, 70, 76	3—Capt James Machell, 1873, 74, 76 3—Sir Charles Assheton-Smith, 1893, 1912, 13 3—Noel Le Mare, 1973, 74, 77	66 (1929)
Cheltenham Gold Cup (1924) 3¼ miles 5230 m Cheltenham	—(1)	4—Pat Taaffe, 1964, 65, 66, 68	5—Tom Dreaper, 1946, 64, 65, 66, 68	7—Dorothy Paget, 1932, 33, 34, 35, 36, 40, 52	22 (1982)
Champion Hurdle (1927) 2 miles 3218 m Cheltenham	—(1)	4—Tim Molony, 1951, 52, 53, 54	5—Peter Easterby, 1967, 76, 77, 80, 81	4—Dorothy Paget 1932, 33, 40, 46	24 (1964)

(1) It would be unrealistic to include time records for these two races because they have been run over a variety of distances and, although always held at Cheltenham, several different courses have been used.

Ouzo at Nottingham on 18 Dec 1971 and he retired on 18 June 1972 after 1049 wins (incl. 14 abroad) in 20 years. He also won three flat races.

The record number of wins in a season is 149 by John 'Jonjo' O'Neill (b. 13 Apr 1952) in 1977–8. The record number of successive wins is ten by John Alnam Gilbert (b. 26 July 1920), 8–30 Sept 1959. The record number of National Hunt championships is seven by Gerald Wilson (1903–68) from 1933 to 1938 and 1941. Capt Kenyon Goode owned, trained and rode three successive winners under National Hunt rules at Torquay, Devon on 7 Apr 1931.

Trainers Most successful

The most first-prize money earned in a season is £296,028 by Michael Dickinson in 1981–2. The record number of wins in a season is 114 by Arthur Stephenson in 1969–70. Fred Winter, CBE, won a record seven trainers' championships between 1971 and 1978.

GRAND NATIONAL

The first Grand National Steeplechase may be regarded as the Grand Liverpool Steeplechase of 26 Feb 1839 though the race was not given its present name until 1847. It became a handicap in 1843. Until 1930 five-year-olds were eligible, but since then it

has been for six-year-olds and above. Except for the two war periods (1916–18 and 1941–5) the race has been run at Aintree,

The record National Hunt prize winner *Night Nurse*, ridden by Paddy Broderick, the pair that won the Champion Hurdle in 1976 and 1977. (Gerry Cranham)



SPEED RECORDS

Distance	Time min sec	mph	km/h	Name	Age	Weight carried lb kg	Course	Date
1/4 mile	20.8	43.26	69.62	<i>Big Racket</i> (Mexico)	4	114 51.7	Mexico City, Mexico	5 Feb. 1940
1/2 mile	44.4	40.54	65.24	<i>Sonido</i> (Venezuela)	2	111 50.3	†Caracas, Venezuela	28 June 1950
5/8 mile	53.6†	41.98	67.56	<i>Western Romance</i> (Canada)	3	116 52.6	Stampede Park, Calgary, Alberta, Canada	19 April 1950
	53.89††	41.75	67.19	<i>Indigenous</i> (GB)	4	131 59.4	†*Epsom Surrey	2 June 1950
	55.4	40.61	65.36	<i>Raffingora</i> (GB)	5	140 63.5	†*Epsom, Surrey	5 June 1950
3/4 mile	1:06.2	40.78	65.62	<i>Zip Pocket</i> (USA)	3	122 55.3	Turf Paradise, Phoenix, Arizona, USA	22 Apr 1950
				<i>Big Volume</i> (USA)	4	120 54.4	Fresno, California, USA	15 Oct 1950
				<i>Gelding by Blink—Broken Tendril</i> (GB)	2	123 55.7	*Brighton, East Sussex	6 Aug 1950
1 mile	1:07.2	40.18	64.66	<i>Grey Papa</i> (USA)	6	112 59.8	Longacres, Seattle, Washington, USA	4 Sept 1950
	1:31.8	39.21	63.10	<i>Souaida</i> (GB)	4	126 57.1	*Brighton, East Sussex	19 Sept 1950
				<i>Loose Cover</i> (GB)	3	110 49.8	*Brighton, East Sussex	9 June 1950
1 1/4 miles	1:32.2	39.04	62.82	<i>Dr Fager</i> (USA)	4	134 60.7	Arlington, Illinois, USA	24 Aug 1950
1 1/2 miles	1:57.4	38.33	61.68	<i>Double Discount</i> (USA)	4	116 52.6	Santa Anita, Arcadia, California, USA	6 Oct 1950
	2:23.0	37.76	60.76	<i>Fiddle Isle</i> (USA)	5	124 56.2	Santa Anita, Arcadia, California, USA	21 Mar 1950
				<i>John Henry</i> (USA)	5	126 57.1	Santa Anita, Arcadia, California, USA	16 Mar 1950
2 miles**	3:15.0	36.93	59.43	<i>Polazel</i> (GB)	3	142 64.4	Salisbury, Wiltshire	8 July 1950
2 1/2 miles	4:14.6	35.35	56.90	<i>Miss Grillo</i> (USA)	6	118 53.5	Pimlico, Baltimore, Maryland, USA	12 Nov 1940
3 miles	5:15.0	34.29	55.18	<i>Farragut</i> (Mexico)	5	113 51.2	Aguascalientes, Mexico	9 Mar 1940

* Epsom and Brighton courses include a sharp descent of 1/4 mile.

** A more reliable modern record is 3 min 16.75 sec by Il Tempo (NZ) (7 yr, 130 lb) at Trentham, Wellington, New Zealand on 17 Jan 1970.

† Hand timed. †† Electrically timed. ‡ Straight courses.

near Liverpool, over a course of 30 jumps. The first woman to complete the race was Mrs Geraldine Rees (b. 7 Nov 1955) on *Cheers* in 1982.

Most wins

The only horse to win three times is *Red Rum* (foaled 1965) in 1973, 1974 and 1977 from five runs. He came second in 1975 and 1976. *Manifesto* ran eight times (1895–1904) and won twice, came third three times and fourth once.

Highest prize

The highest prize and the richest ever under National Hunt rules was £52,507 won by *Grittar*, owned and trained by Frank Gilman, and ridden by Mr Dick Saunders (b. 28 Jul 1933) who at 48 years 249 days is the oldest winning jockey, on 3 Apr 1982.

Highest weight

The highest weight ever carried to victory is 12 st 7 lb (175 lb) 79.4 kg by *Cloister* (1893), *Manifesto* (1899), *Ferry M* (1912) and *Poethlyn* (1919).

HURLING

Earliest reference

A game of very ancient origin, hurling was included in the Tailteann Games (inst 1829 BC). It only became standardised with the formation of the Gaelic Athletic Association in Thurles, Ireland, on 1 Nov 1884. The Irish Hurling Union was formed on 24 Jan 1879.

Most titles All-Ireland

The greatest number of All-Ireland Championships won by one team is 24 by Cork between 1890 and 1978. The greatest number of successive wins is the four by Cork (1941–4).

Most titles Inter-provincials

Munster holds the greatest number of inter-provincial (Railway Cup) championships with 34 (1928–77).

Most appearances

The most appearances in All-Ireland finals is ten shared by Christy Ring (Cork and Munster) and John Doyle (Tipperary). They also share the record of All-Ireland medals won with eight each. Ring's appearances on the winning side were in 1941–4, 1946 and 1952–4, while Doyle's were in 1949–51, 1958, 1961–2 and 1964–5. Ring also played in a record 22 inter-provincial finals (1942–63) and was on the winning side 18 times.

Highest scores

The highest score in an All-Ireland final (60 min) was in 1896 when Tipperary (8 goals, 14 points) beat Dublin (no goals, 4 points). The record aggregate score was when Cork (6 goals, 21 points) defeated Wexford (5 goals, 10 points) in the 80 min final of 1970. A goal equals three points.

The highest recorded individual score was by Nick Rackham (Wexford), who scored 7 goals and 7 points against Antrim in the 1954 All Ireland semi-final.

Lowest score

The lowest score in an All-Ireland final was when Tipperary (1 goal, 1 point) beat Galway (nil) in the first championship at Thurles in 1887.

Longest stroke

The greatest distance for a 'lift and stroke' is one of 129 yd credited to Tom Murphy of Three Castles, Kilkenny, in a 'long puck' contest in 1906. The record for the annual *An Poc Fada* (Long Puck) contest (instituted 1961) in the ravines of the Cooley Hills, north of Dundalk, County Louth, is 65 pucks (drives) plus 87 yd 79 m over the course of 3 miles 5120 km by Fionnbar O'Neill (Cork) in 1966. This represents an average of 84.8 yd 77.5 m per drive.

Largest crowd

The largest crowd was 84,856 for the final between Cork and Wexford at Croke Park, Dublin, in 1954.

ICE HOCKEY

Origins

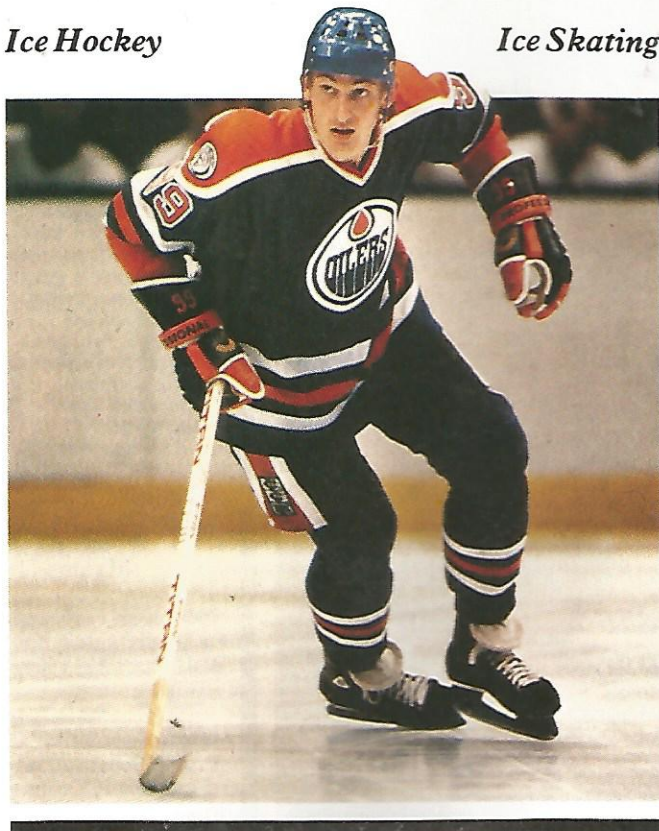
There is pictorial evidence that a hockey-like game (*Kale*) was played on ice in the early 16th century in The Netherlands. The game was probably first played in North America on 25 Dec 1855 at Kingston, Ontario, Canada, but Halifax also lays claim to priority. The International Ice Hockey Federation was founded in 1908. The National Hockey League of North America was inaugurated 1917. The World Hockey Association was formed in 1971 and disbanded in 1979.

Olympic Games and World Championships

Canada has won the Olympic Championship six times (1920, 1924, 1928, 1932, 1948 and 1952) and the world title 19 times, the last being at Geneva in 1961. The longest Olympic career is that of Richard Torriani (b. 1 Oct 1911) (Switzerland) from 1920 to 1948. The most gold medals won by any player is three achieved by Vitaliy Davidov, Anatoliy Firsov, Viktor Kharlamov and Aleksandr Ragulin of the USSR teams that won the Olympic titles in 1964, 1968 and 1972. World amateur championships began at Antwerp, Belgium in 1920, and were first opened to professionals in 1976.

Stanley Cup

The Stanley Cup, presented by the Governor-General, Lord Stanley (original cost \$48.67), became emblematic of National Hockey League supremacy 33 years after the first contest at Montreal in 1893. It has been won most often by the Montreal Canadiens.



Wayne Gretzky of the Edmonton Oilers demolished all the NHL scoring records in 1981-2, his third year in the league, having broken his own goals, assists and points records of the previous year by 37, 11 and 48 respectively. (*All-Sport*)

Canadiens with 22 wins in 1916, 1924, 1930-1, 1944, 1946, 1953, 1956-60, 1965-6, 1968-9, 1971, 1973, 1976-9.

British Competitions

The English (later British) League championship (inst. 1934) has been won by the Wembley Lions four times in 1936-7, 1952 and 1957 and by Streatham (now Redskins) in 1950, 1953, 1960 and 1982. Murrayfield Racers have won the Northern League (inst. 1966) six times, 1970-2, 1976, 1979 and 1980. The Icy Smith Cup (first held 1966), emblematic of British club supremacy, has been won by Murrayfield Racers nine times, 1966, 1969-72, 1975 and 1979-81. The first British club championship was won by Dundee Rockets on 25 Apr 1982.

Most goals Team

The greatest number of goals recorded in a world championship match has been 47-0 when Canada beat Denmark in Stockholm, Sweden on 12 Feb 1949. The National Hockey League record is 21 goals when Montreal Canadiens beat Toronto St Patrick's, at Montreal, 14-7 on 10 Jan 1920.

Most goals and points Individual

The most goals scored in a season in the NHL is 92 in the 1981-2 season by Wayne Gretzky (b. 26 Jan 1961) (Edmonton Oilers). He also scored a record 212 points and had a record 120 assists in that season. He scored an additional 12 points (5 goals, 7 assists) in the Stanley Cup playoffs and 14 points (6 goals, 8 assists) for Canada in the World Championships in April 1982. The North American career record for goals is 1071 (801 in the NHL) by Gordie Howe (b. 31 Mar 1928) (Detroit Red Wings, Houston Aeros, New England Whalers and Hartford Whalers) from 16 Oct 1946 in 32 seasons ending in 1979-80. He took 2204 games to achieve the 1000th goal, but Robert Marvin 'Bobby' Hull, OC (b. 3 Jan 1939) (Chicago Black Hawks and Winnipeg Jets) scored his 1000th in 1600 games on 12 Mar 1978.

Most goals and points British

The highest score and aggregate in a League match has been 34-0 when Streatham beat Deeside Dragons on 1 Nov 1975. The most individual goals scored in a senior game is 14 by Roy Halpin for Dundee Rockets in a 24-1 win over Durham Wasps at Dundee on 4 Apr 1982. Halpin set British senior records of 151 goals and 254 points in 48 games in the 1981-2 season.

Most points one game

The North American major league record for most points scored in one game is ten (3 goals, 7 assists) by Jim Harrison (b. 9 July 1947) (for Alberta, later Edmonton Oilers) in a WHA match at Edmonton on 30 Jan 1973, and by Darryl Sittler (b. 18 Sept 1950) (6 goals, 4 assists) for Toronto Maple Leafs in a NHL match at Toronto on 7 Feb 1976. In Britain, Richard Bacon scored 15 (10 goals, 5 assists) for Streatham v. Deeside on 1 Nov 1975.

Fastest scoring World

In the NHL the fastest goal was after 4 sec in the second period by Joseph Antoine Claude Provost (b. 17 Sept 1933) (Montreal Canadiens) v. Boston Bruins at Montreal on 9 Nov 1957. Canadian Bill Mosienko (Chicago Black Hawks) (b. 2 Nov 1921) scored three goals in 21 sec v. New York Rangers on 23 Mar 1952. Toronto scored eight goals in 4 min 52 sec v. New York Americans on 19 Mar 1938.

In minor leagues, Kim D. Miles scored in 3 sec for Univ of Guelph v. Univ of W Ontario on 11 Feb 1975. Three goals in 12 sec was achieved by Steve D'Innocenzo for Holliston v. Westwood in a high school match in Massachusetts, USA on 9 Jan 1982. The Skara Ishockeyclubb, Sweden scored three goals in 11 sec against Örebro IK at Skara on 18 Oct 1981. The Vernon Cougars scored five goals in 56 sec against Salmon Arm Aces at Vernon, BC, Canada on 6 Aug 1982. The Kamloops Knights of Columbus scored seven goals in 2 min 22 sec v. Prince George Vikings on 25 Jan 1980.

Fastest scoring Great Britain

Kenny Westman (Nottingham Panthers) scored a hat trick in 30 sec v. Brighton Tigers on 3 Mar 1955.

Most successful goaltending

The most matches played by a goaltender without conceding a goal is 103 by Terrance 'Terry' Gordon Sawchuck (b. 28 Dec 1929) of Detroit Red Wings, Boston Bruins, Toronto Maple Leafs, Los Angeles Kings and New York Rangers, between 1950 and 1967. Gerry Cheevers (b. 2 Dec 1940), Boston Bruins, went a record 33 games without defeat in 1971-2.

Fastest player

The highest speed measured for any player is 29.7 mph 47.7 km/h for Bobby Hull. The highest puck speed is also attributed to Hull, whose left-handed slap shot has been timed at 118.3 mph 190.3 km/h.

Longest match

The longest match was 2 hr 56 min 30 sec (playing time) when Detroit Red Wings beat Montreal Maroons 1-0 in the sixth period of overtime at the Forum, Montreal, at 2.25 a.m. on 25 Mar 1936. Norm Smith, the Red Wings goaltender, turned aside 92 shots for the NHL's longest single shutout.

ICE SKATING

Origins

The earliest reference to ice skating is in early Scandinavian literature referring to the 2nd century though its origins are believed, on archaeological evidence, to be ten centuries earlier still. The earliest English account of 1180 refers to skates made of bone. The earliest known illustration is a Dutch woodcut of 1498. The earliest skating club was the Edinburgh Skating Club formed in about 1742. The first recorded race was from Wisbech to Whittlesea, East Anglia, in 1763. The earliest artificial ice rink in the world was opened at the Baker Street Bazaar, Portman Square, London, on 7 Dec 1842. The National Skating Association of Great Britain was founded in 1879. The International Skating Union was founded at Scheveningen, Netherlands in 1892.

FIGURE SKATING

Most titles Olympic

The most Olympic gold medals won by a figure skater is three by Gillis Grafström (1893-1938) of Sweden in 1920, 1924, and 1928 (also silver medal in 1932); by Sonja Henie (1912-69) of Norway in 1928, 1932 and 1936; and by Irina Rodnina (b. USSR 12 Sept 1949) in the Pairs event in 1972, 1976, and 1980.

Jayne Torvill and Christopher Dean set new standards of excellence for ice dancing in 1982. They won both European and World titles for the second successive year. Their intensely moving, dramatic interpretation of the blues, in particular, brought them perfect scores and lasting acclaim. (Associated Sports Photography)



SPEED SKATING WORLD OUTDOOR RECORDS

	Distance	min sec	Name and Country	Place	Date
MEN	500 metres	36.91*	Yevgeniy Kulikov (USSR)	Medeo, USSR	28 Mar 1981
	1000 metres	1:13.39	Gaetan Boucher (Canada)	Davos, Switzerland	31 Jan 1981
	1500 metres	1:54.79	Eric Heiden (USA)	Davos, Switzerland	19 Jan 1980
	3000 metres	4:04.06	Dmitriy Ogloblin (USSR)	Medeo, USSR	28 Mar 1981
	5000 metres	6:54.66	Aleksandr Baranov (USSR)	Medeo, USSR	18 Mar 1980
	10,000 metres	14:23.59	Tomas Gustafson (Sweden)	Oslo, Norway	31 Jan 1980
WOMEN	500 metres	40.18	Christa Rothenburger (E. Germany)	Medeo, USSR	28 Mar 1981
	1000 metres	1:20.81	Natalia Petrusheva (USSR)	Medeo, USSR	28 Mar 1981
	1500 metres	2:05.39	Natalia Petrusheva (USSR)	Medeo, USSR	27 Mar 1981
	3000 metres	4:21.70	Gabi Schönbrunn (E. Germany)	Medeo, USSR	28 Mar 1981

*represents an average speed of 48.76 km/h 30.30 mph

BRITISH OUTDOOR RECORDS

	Distance	min sec	Name	Place	Date
MEN	500 metres	39.41	Archie Marshall	Davos, Switzerland	20 Jan 1980
	1000 metres	1:19.23	Archie Marshall	Davos, Switzerland	20 Jan 1980
	1500 metres	2:05.99	Steve Pearce	Madonna di Campiglio, Italy	16 Jan 1977
	3000 metres	4:25.40	Alan Luke	Heerenveen, Netherlands	1980
	5000 metres	7:34.49	Alan Luke	Inzell, W. Germany	3 Jan 1980
	10,000 metres	15:35.74	Alan Luke	Inzell, W. Germany	7 Mar 1980
WOMEN	500 metres	46.53	Kim Ferran	Inzell, W. Germany	5 Jan 1980
	1000 metres	1:31.85	Kim Ferran	Madonna di Campiglio, Italy	10 Jan 1979
	1500 metres	2:21.86	Amanda Horsepool	Inzell, W. Germany	27 Dec 1980
	3000 metres	4:54.74	Kim Ferran	Inzell, W. Germany	6 Jan 1979

WORLD SHORT-TRACK (INDOOR) RECORDS

	Distance	min sec	Name and Country	Place	Date
MEN	500 metres	45.47	Gaetan Boucher (Canada)	Moncton, Canada	4 Apr 1980
	800 metres	1:15.51	Tatsuyoshi Ishihara (Japan)	The Hague, Netherlands	29 Mar 1981
	1000 metres	1:37.91	Guy Daignault (Canada)	The Hague, Netherlands	3 Apr 1980
	1500 metres	2:27.27	Tatsuyoshi Ishihara (Japan)	The Hague, Netherlands	28 Mar 1981
WOMEN	500 metres	50.44	Sylve Daigle (Canada)	Moncton, Canada	3 Apr 1980
	1000 metres	1:44.68	Maryse Pemeault (Canada)	Moncton, Canada	3 Apr 1980
	1500 metres	2:42.13	Louis Begin (Canada)	Moncton, Canada	2 Apr 1980
	3000 metres	5:40.73	Miyoshi Kato (Japan)	The Hague, Netherlands	29 Mar 1981

BRITISH SHORT-TRACK (INDOOR) RECORDS

	Distance	min sec	Name	Place	Date
MEN	400 metres	38.15	Stewart Pass	Birmingham	19 Mar 1980
	500 metres	47.75	Stewart Horsepool	Amsterdam, Netherlands	13 Mar 1980
	800 metres	1:18.48	Stewart Horsepool	Birmingham	19 Mar 1980
	1000 metres	1:35.97	Wili O'Reilly	Moncton, Canada	3 Apr 1980
	1500 metres	2:37.00	Stewart Horsepool	Birmingham	18 Mar 1980
	3000 metres	5:24.54	Stewart Horsepool	Birmingham	19 Mar 1980
WOMEN	400 metres	43.40	Lisa Harald	Birmingham	19 Mar 1980
	800 metres	1:29.19	Lisa Harald	Birmingham	19 Mar 1980
	1500 metres	3:00.34	Lisa Harald	Birmingham	18 Mar 1980
	3000 metres	16:16.37	Lisa Harald	Birmingham	19 Mar 1980

Most titles World

The greatest number of individual world figure skating titles (instituted 1896) is ten by Ulrich Salchow (1877–1949) of Sweden, in 1901–5 and 1907–11. The women's record (instituted 1906) is also ten individual titles by Sonja Henie between 1927 and 1936. Irina Rodnina has won ten pairs titles (inst. 1908), four with Aleksiy Ulanov (b. 4 Nov 1947) 1969–72, and six with her husband Aleksandr Zaitsev (b. 16 June 1952) 1973–8. Most ice dance titles (inst. 1952) won is six by Aleksandr Gorshkov (b. 8 Dec 1946) and Ludmila Pakhomova (b. 31 Dec 1946) (USSR) 1970–4 and 1976.

Most titles British

The most individual British titles is 11 by Jack Page (1900–47) (Manchester SC) in 1922–31 and 1933, and six by Cecilia Colledge (b. 28 Nov 1920) (Park Lane FSC, London) in 1935–7 (two), 1938 and 1946. Page also won nine pairs titles, 1923–31.

Triple Crown

The only British skater to win the 'Grand Slam' of World, Olympic and European titles in the same year is John Anthony Curry, OBE (b. 9 Sept 1949) in 1976. Karl Schäfer (Austria) (1909–76) and Sonja Henie achieved double 'Grand Slams', both in the years 1932 and 1936.

Highest marks

The highest number of maximum six marks awarded for one performance in an international championship was 12 to Aleksandr Zaitsev and Irina Rodnina (USSR) in the European pairs in Cologne, W. Germany on 7 Feb 1978. The highest score from a single set of marks in any figure skating competition was gained by Jayne Torvill (b. 7 Oct 1957) and Christopher Dean (b. 27 July 1958) of Great Britain when awarded maximum sixes for presentation from eight of the nine judges in the ice dance event of the European championships at Lyon, France, on 5 Feb 1982. They received a further three sixes for technical merit for a total of 11, the highest for ice dancing. The most by a soloist was seven to Donald Jackson (b. 2 Apr 1940) (Canada) in the world men's championship at Prague, Czechoslovakia, in 1962.

Most difficult jump

The first ever triple Axel jump in competition was by Vern Taylor (b. 1 Mar 1958) (Canada) in the World Championships at Ottawa on 10 Mar 1978. The quadruple twist lift has been performed by only one pair, Sergei Shakrai (b. 28 June 1958) and Marina Tcherkasova (b. 17 Nov 1964), of USSR, in an international championship, at Helsinki, on 26 Jan 1977. They also were the first skaters to accomplish simultaneous triple jumps at that level, at Strasbourg, France on 1 Feb 1978.

Largest rink

The world's largest indoor ice rink is in the Moscow Olympic arena which has an ice area of 8064 m² 86,800 ft².

Marathon

The longest recorded skating marathon is 109 hr 5 min by Austin McKinley, of Christchurch, New Zealand on 21–25 June 1977.

SPEED SKATING**Most titles Olympic**

The most Olympic gold medals won in speed skating is six by Lidia Skoblikova (b. 8 Mar 1939) of Chelyabinsk, USSR, in 1960 (two) and 1964 (four). The male record is by Clas Thunberg (1893–1973) (Finland) with five gold (including one tied), and also one silver and one tied bronze in 1924 and 1928. Eric Heiden (USA) (b. 14 June 1958) also won five gold medals, all at Lake Placid, NY, USA, in 1980.

Most titles World

The greatest number of world overall titles (instituted 1893) won by any skater is five by Oscar Mathisen (Norway) (1888–1954) in 1908–9 and 1912–14, and Clas Thunberg in 1923, 1925, 1928–9 and 1931. The most titles won by a woman is four by Inga Voronina (née Artomova) (1936–66) of Moscow, USSR, in 1957, 1958, 1962 and 1964 and Atje Keulen-Deelstra (b. 31 Dec 1938) (Netherlands) 1970, 1972–4.

The record score achieved in the world overall title is 162,973 points by Eric Heiden (USA) at Oslo, Norway, 10–11 Feb 1979.

Longest race

The longest race regularly held was the 'Elfstedentocht' ('Tour of the Eleven Towns') in the Netherlands, covering 200 km 124 miles 483 yd. The fastest time was 7 hr 35 min by Jeen van den Berg (b. 8 Jan 1928) on 3 Feb 1954. The race has now been transferred to Lake Vesivärjä, near Lahti, Finland.

ICE AND SAND YACHTING**Origins**

The sport originated in the Low Countries from the year 1600 (earliest patent granted) and along the Baltic coast. The earliest authentic record is Dutch, dating from 1768. Land or sand yachts of Dutch construction were first reported on beaches (now in Belgium) in 1595. The earliest International championship was staged in 1914.

Largest yacht

The largest known ice yacht was *Icicle*, built for Commodore John E. Roosevelt for racing on the Hudson River, New York, in 1869. It was 68 ft 11 in 21 m long and carried 1070 ft² 99 m² of canvas.

Highest speeds Ice

The highest speed officially recorded is 143 mph 230 km/h by John D. Buckstaff in a Class A stern-steerer on Lake Winnebago, Wisconsin, USA, in 1938. Such a speed is possible in a wind of 72 mph 115 km/h.

Highest speeds Sand

The official world record for a sand yacht is 107 km/h 66.48 mph set by Christian Yves Nau (France) in *Mobil* at Le Touquet, France on 22 Mar 1981. A speed of 88.4 mph 142.26 km/h was attained by Nord Embroden of USA in *Midnight at the Oasis* at Superior Dry Lake, California, USA on 15 Apr 1976.

JUDO**Origins**

Judo is a modern combat sport which developed out of an amalgam of several old (pre-Christian era) Japanese fighting arts, the most popular of which was ju-jitsu (jiu-jitsu), which is thought to be of pre-Christian Chinese origin. Judo has greatly developed since 1882, when it was first devised by Dr Jigoro Kano (1860–1938).

Most titles World and Olympic

World championships were inaugurated in Tōkyō on 5 May 1956. Two men have won four world titles, Wilhelm Ruska (b. 29 Aug 1940) (Netherlands), 1967, 1971 Heavyweight and the 1972 Olympic Heavyweight and Open titles, and Shozo Fujii (Japan) (b. 12 May 1950), the Middleweight title 1971, 1973, 1975, and 1979. In the European championships (instituted in 1951) only Great Britain (1957–9) and the USSR (1972–4) have won three consecutive team titles.

Most titles British

The greatest number of titles (inst. 1966) won is nine by David Colin Starbrook, MBE (b. 9 Aug 1945) (5th dan) who won the Middleweight title 1969–70, the Light-heavyweight 1971–5 and the Open division 1970–1. The women's championships were instituted in 1971. Christine Child (b. 1946) (5th dan) has won a record six times: the Heavyweight in 1971–5 and the Open division in 1973.

Highest grades

The efficiency grades in Judo are divided into pupil (*kyu*) and master (*dan*) grades. The highest awarded is the extremely rare red belt *Judan* (10th dan), given only to seven men so far. The highest awarded to a woman is 6th dan, achieved by three Japanese women. The Judo protocol provides for an 11th dan (*Jūichidan*) who also would wear a red belt, a 12th dan (*Jūnidan*) who would wear a white belt twice as wide as an ordinary belt and the highest of all, *Shihan*, but these have never been bestowed. The highest British native Judo grade is 8th dan by Charles Stuart Palmer, OBE (b. 1930).



Shozo Fujii (no. 354—right), winner of a record four World Judo championships, throwing his opponent. (*All-Sport*)

Marathon

The longest recorded continuous Judo marathon, by two of six Judoka in 5 min stints, is 216 hr by the Wanganui Judo Club, New Zealand on 29 Aug–7 Sept 1980.

KARATE

Origins

Based on techniques devised from the sixth century Chinese art of Shaolin boxing (Kempo), Karate was developed by an unarmed populace in Okinawa as a weapon against armed Japanese oppressors c. 1500. Transmitted to Japan in the 1920s by Funakoshi Gichin, this method of combat was refined into Karate and organised into a sport with competitive rules. The five major styles of Karate in Japan are: *Shotokan*, *Wado-ryu*, *Goju-ryu*, *Shito-ryu* and *Kyokushinkai*, each of which place different emphasis on speed and power, etc. Other styles include *Sankukai*, *Shotokai* and *Shukokai*. The military form of *Tae kwon-do* with nine dans is a Korean equivalent of Karate. *Wu shu* is a comprehensive term embracing all Chinese martial arts. *Kung fu* is one aspect of these arts popularised by the cinema. (See also p. 188).

The Governing Body for the sport in Britain is the Martial Arts Commission upon which all the martial arts are represented.

Great Britain became the first country ever to defeat the Japanese in competition when they beat them in the 1972 World championships in Paris. They repeated the feat in the final of the 1975 World championships at Long Beach, California, USA and during the 1977 World championships in Tokyo.

Most titles

The only winner of three All-Japanese titles has been Takeshi Oishi who won in 1969–71. Victor John Charles (b. 7 Feb 1954) has been the most successful British Karateka, with four English, two European and two World titles between 1978 and 1982.

Top exponents

The leading exponents among karatekas are a number of 10th dans in Japan. The leading exponents in the United Kingdom are Tatsuo Suzuki (8th dan, *Wado-ryu*) (b. 27 Apr 1928) chief instructor to the European Karatedo Wadokai; Keinosuke Enoda (8th dan, *Shotokan*), resident instructor to the Karate Union of Great Britain and Steve Arneil (7th dan, *Kyokushinkai*) British national born in South Africa.

LACROSSE

Origins

The game is of American Indian origin, derived from the inter-tribal game *baggataway*, and was played before 1492 by Iroquois Indians in lower Ontario, Canada and upper New York State, USA. The French named it after their game of *Chouler à la crosse*, known in 1381. It was introduced into Great Britain in 1867. The English Lacrosse Union was formed in 1892. It was included in the Olympic Games of 1908 and featured as an exhibition sport in the 1928 and 1948 Games.

Most titles World

The United States have won three of the four World Championships, in 1967, 1974 and 1982. Canada won the other in 1970 beating the USA 17–16 after extra time—this was the first drawn international match.

Most titles English

The English Club Championship (Iroquois Cup), instituted in 1890, has been won most often by Stockport with 15 wins between 1897 and 1934. The record score in a final was in 1902 when Sheffield University beat Hampstead 30–5.

Highest scores

The highest score in any international match was the United States' 28–4 win over Canada at Stockport, Greater Manchester on 3 July 1978. England's highest score was their 19–11 win over Canada at Melbourne in 1974. The highest score in the annual North of England v. South of England match was when the North won 29–9 in 1980.

Most international appearances

The record number of international representations for men is 33 for England by James Michael 'Mike' Roberts (Urmston).

(b. 22 Feb 1946), to 1982. He is the only person to play in all four World Championships.

The record for women is 52 for Scotland by Caro Macintosh (b. 18 Feb 1932), 1952–69 and four for Great Britain 1960–64.

Fastest scoring

Rod Burns scored only 4 sec into the game for South Manchester and Wythenshawe v. Sheffield Univ. on 6 Dec 1975.

LAWN TENNIS

Origins

The modern game is generally agreed to have evolved as an outdoor form of the indoor game of Tennis (see separate entry). 'Field Tennis' is mentioned in an English magazine—*Sporting Magazine*—of 29 Sept 1793. The earliest club for such a game, variously called Pelota or Lawn Rackets, was the Leamington Club founded in 1872 by Major Harry Gem. The earliest attempt to commercialise the game was by Major Walter Clopton Wingfield, MVO (1833–1912) who patented a form called 'sphaeristike' on 23 Feb 1874. It soon became called Lawn Tennis. Amateur players were permitted to play with and against professionals in 'Open' tournaments in 1968.

Greatest domination

The grand slam is to hold at the same time all four of the world's major championship singles: Wimbledon, the United States, Australian and French championships. The first man to have won all four was Frederick John Perry (GB) (b. 18 May 1909) with the French title in 1935. The first man to hold all four championships simultaneously was John Donald Budge (USA) (b. 13 June 1915) with the French title in 1938. The first man to achieve the grand slam twice was Rodney George Laver, MBE (Australia) (b. 9 Aug 1938) having won in 1962 as an amateur and again in 1969 when the titles were 'open' to professionals.

Only two women have achieved the grand slam: Maureen Catherine Connolly (USA) (1934–69), later Mrs Norman E. Brinker, in 1953; and Margaret Jean Court, MBE (*née* Smith) (Australia) (b. 16 July 1942) in 1970.

Fastest service

The fastest service timed with modern equipment is 137 mph 220 km/h by Scott Carnahan (USA) at Los Angeles, California, USA, in Sept 1976. The fastest ever measured was one of 163.6 mph 263 km/h by William Tatem Tilden (1893–1953) (USA) in 1931.

Longest game

The longest known singles game was one of 37 deuces (80 points) between Anthony Fawcett (Rhodesia) and Keith Glass (GB) in the first round of the Surrey championships at Surbiton, Surrey, on 26 May 1975. It lasted 31 min.

Greatest crowd

The greatest crowd at a tennis match was 30,472 at the Astrodome, Houston, Texas, on 20 Sept 1973, when Billie-Jean King (*née* Moffitt) (b. 22 Nov 1943) (USA) beat Robert Larimore Riggs (b. 25 Feb 1918) (USA). The record for an orthodox match is 25,578 at Sydney, NSW, Australia on 27 Dec 1954 in the Davis Cup Challenge Round (first day) Australia v. USA.

Highest earnings

Bjorn Rune Borg (Sweden) (b. 6 June 1956) won a record \$1,019,345 in 1979. The record for a woman player is \$865,437 in 1981 by Martina Navratilova (b. Prague, 18 Oct 1956). Earnings from special restricted events and team tennis salaries are not included.

The one match record is \$500,000 £217,400 won by James Scott Connors (USA) (b. 2 Sept 1952) when he beat John David Newcombe (Australia) (b. 23 May 1944) in a challenge match at Caesars Palace, Las Vegas, USA on 26 Apr 1975.

The highest total prize money is \$680,000 for the Dubai Golden Tournament in November 1980.

Longest span

The championship career of C. Alphonso Smith (b. 18 Mar 1909) of Charlottesville, Virginia, USA, extended from winning the United States National Boys' title at Chicago, on 14 Aug 1924, to winning the National 70-and-over Hard Court Doubles title at Santa Barbara, California, in Aug 1979. Smith has won 31 US National Titles in all.

Marathons

The longest recorded lawn tennis singles match is one of 105 hr by Ricky Tolston and Jeff Sutton at Bill Faye Park, Kinston, NC, USA, on 7–11 May 1979. The duration record for doubles is 84 hr 7 min by Daryl Murray, Richard Munao, Stephen Duerden and Stephen Foord at the Racquet Centre, Silverwater, NSW, Australia on 7–10 Jan 1980.

INTERNATIONAL TEAM COMPETITIONS

Davis Cup

The most wins in the Davis Cup (inst. 1900), the men's international team championship, have been (inclusive of 1981) by the USA with 27. The most appearances for Cup winners is eight by Roy Emerson (Australia) (b. 3 Nov 1936), 1959–62, 1964–7. The British Isles/Great Britain have won nine times in 1903–6, 1912, 1933–6.

Nicola Pietrangeli (b. 11 Sept 1933) (Italy) played a record 164 rubbers, 1954 to 1972, winning 120. He played 110 singles (winning 78) and 54 doubles (winning 42). He took part in 66 ties. The record number of rubbers by a British player is 65 (winning 43) by Michael J. Sangster (b. 9 Sept 1940), 1960–68.

Wightman Cup

The most wins in the Wightman Cup (inst. 1923) have been 44 by the United States. Virginia Wade (GB) (b. 10 July 1945) played in a record 17 ties and 50 rubbers between 1965 and 1981.

Federation Cup

The most wins in the Federation Cup (inst. 1963), the women's international team championship, is 11 by the USA. Virginia Wade (GB) played each year from 1967 to 1982, in a record 54 ties, playing 97 rubbers, including 53 singles (winning 34) and 44 doubles (winning 30). Christine Marie Lloyd (*née* Evert) (USA) (b. 21 Dec 1954) won all her 28 singles matches, 1977 to 1982.

WIMBLEDON CHAMPIONSHIPS

For more details see 100 Years of Wimbledon by Lance Tingay, published by Guinness Superlatives Ltd. (price £8.50)

Most wins Women

Six time singles champion Billie-Jean King has won ten women's doubles and four mixed doubles during the period 1961 to 1979, to total a record 20 titles. Elizabeth Montague Ryan (USA) (1892–1979) won a record 19 doubles titles from 1914 to 1934.

Most wins Men

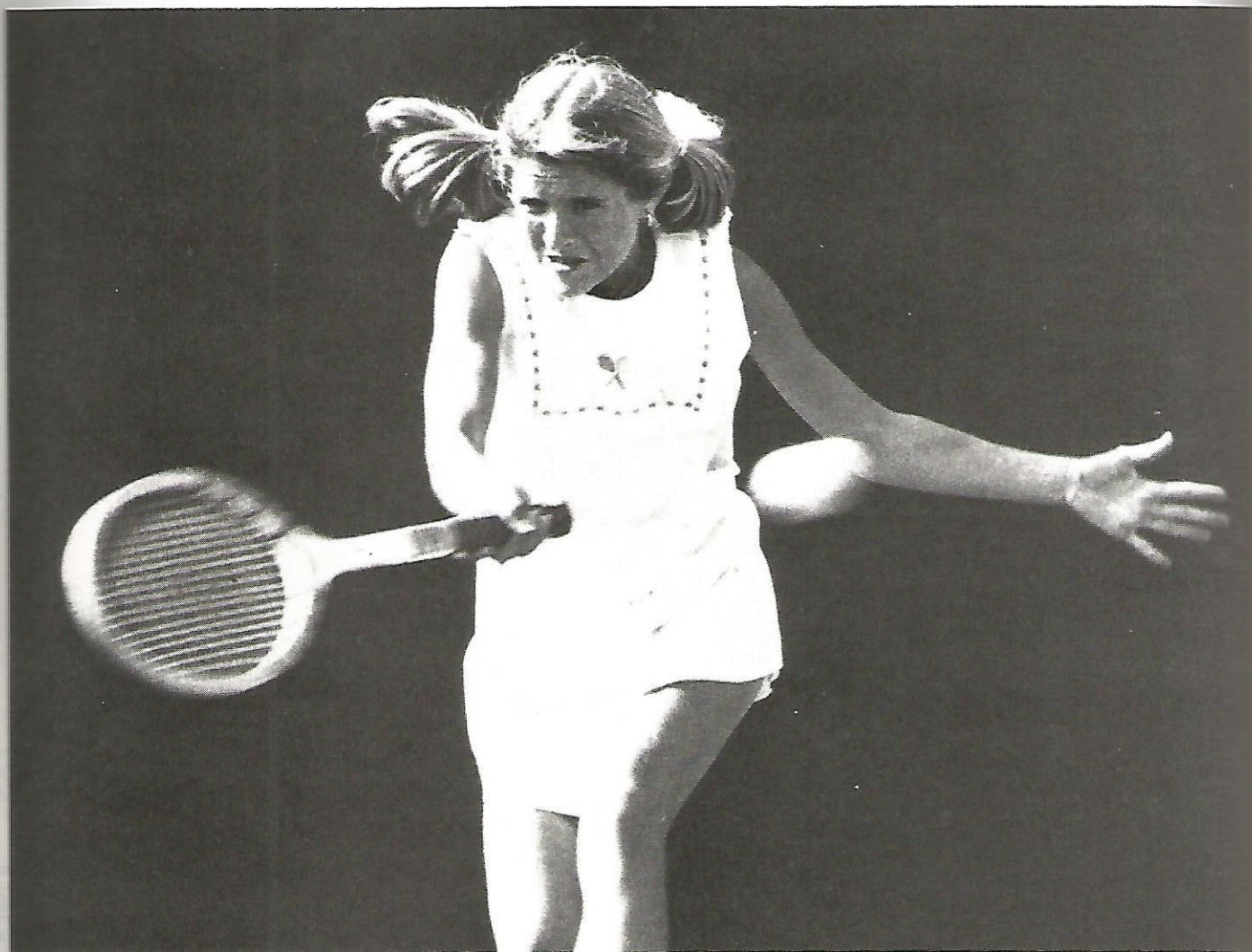
The greatest number of wins by a man has been 13 by Hugh Laurence Doherty (GB) (1875–1919) with five singles titles (1902–6) and a record eight men's doubles (1897–1901, 1903–5) partnered by his brother Reginald Frank (1872–1910).

Most wins Singles

The greatest number of singles wins was eight by Helen Newington Moody (*née* Wills) (USA) (b. 6 Oct 1905), who won in 1927–30, 1932–3, 1935 and 1938. The most men's singles wins since the Challenge Round was abolished in 1922 is five consecutively, by Bjorn Borg (Sweden) in 1976–80. William Charles Renshaw (GB) (1861–1904) won seven singles in 1881–6 and 1889.

Most wins Mixed doubles

The male record is four wins shared by Elias Victor Seinas (USA) (b. 30 Aug 1923) in 1953–6, Kenneth Norman Fletcher (Australia) (b. 15 June 1940) in 1963, 1965–6, 1968 and Owen Keir Davidson (Australia) (b. 4 Oct 1943) in 1967, 1971, 1973–4. The female record is seven by Elizabeth Ryan (USA) from 1919 to 1932.



Record breaking youngsters. Tracy Austin (above) is the youngest ever US singles champion and the youngest Wimbledon champion (mixed doubles at 17 years 206 days in 1980) since 'Lottie' Dod (left). (Tony Duffy, All-Sport/Mansell Collection)

Most appearances

Arthur William Charles 'Wentworth' Gore (1868–1928) (GB) made a record 36 appearances at Wimbledon between 1888 and 1927, and was in 1909 at 41 years 6 months the oldest ever singles winner. In 1964, Jean Borotra (b. 13 Aug 1898) of France, made his 35th appearance since 1922. In 1977 he appeared in the Veterans' Doubles aged 78.

Youngest champions

The youngest champion was Charlotte 'Lottie' Dod (1871–1960), who was 15 years 285 days when she won in 1887 (see also p. 240). Richard Dennis Ralston (USA) (b. 27 July 1942) was 17 years 341 days when he won the men's doubles with Rafael Herrera Osuna (1938–69) of Mexico in 1960. The youngest male singles champion was Wilfred Baddeley (1872–1929) who won the Wimbledon title in 1891 aged 19 years 175 days. The youngest ever player at Wimbledon is reputedly Mita Klima (Austria) who was 13 years old in the 1907 singles competition. The youngest player to win a match at Wimbledon is Kathy Rinaldi (b. 24 Mar 1967) (USA), at 14 years 91 days on 23 June 1981.

Oldest champions

The oldest champion was Margaret Evelyn du Pont (née Osborne) (USA) (b. 4 Mar 1918) at 44 years 125 days when she won the mixed doubles in 1962 with Neale Fraser (Aus). The oldest singles champion was Arthur Gore (GB) in 1909 at 41 years 182 days.

Greatest crowd

The record crowd for one day is 38,291 on 27 June 1979. The record for the whole championship is 358,250 in 1981.

UNITED STATES CHAMPIONSHIPS

Most wins

Margaret Evelyn du Pont (née Osborne) won a record 24 titles between 1941 and 1960. She won a record 13 women's doubles (12 with Althea Louise Brough), eight mixed doubles and three singles. The men's record is 16 by William Tatem Tilden, including seven men's singles, 1920–25, 1929—a record for singles shared with Richard Dudley Sears (1861–1943), 1881–7; William A Larned (1872–1926), 1901–2, 1907–11, and women's singles by Molla Mallory (née Bjurstedt) (1892–1959), 1915–6, 1918, 1920–2, 1926 and Helen Moody (née Wills), 1923–5, 1927–9, 1931.

Youngest and Oldest

The youngest champion was Vincent Richards (1903–59), who was 15 years 139 days when he won the mixed doubles with Bill Tilden in 1918. The youngest singles champion was Tracy Ann Austin (b. 12 Dec 1962) who was 16 years 271 days when she won the women's singles in 1979. The oldest champion was Margaret du Pont who won the mixed doubles at 42 years 166 days in 1960. The oldest singles champion was William Larned at 38 years 242 days in 1911.

MARBLES

Origins

Marbles may have been a children's game in Ancient Egypt, and was introduced into Britain by the Romans in the 1st Century AD. It became a competitive sport under the British Marbles Board of Control at the Greyhound Hotel, Tinsley Green, Crawley, West Sussex in 1926. The governing body now is the British Isles Marbles Association.

Most championships

The British Championship (established 1926) has been won most often by the Toucan Terribles with 20 consecutive titles (1956–75). Three founder members, Len Smith, Jack and Charlie Dempsey played in every title win. They were finally beaten in 1976 by the Pernod Rams, captained by Len Smith's son, Paul. Len Smith (b. 13 Oct 1917) has won the individual title 15 times (1957–64, 1966, 1968–73) but lost in 1974 to his son Alan.

Speed record

The record for clearing the ring (between 5¾ and 6¼ ft 1.75–1.90 m in diameter) of 49 marbles is 2 min 57 sec by the Toucan Terribles at Worthing, West Sussex in 1971.

MODERN PENTATHLON

Points scores in riding, fencing, cross country and hence overall scores have no comparative value between one competition and another. In shooting and swimming (300 m) the scores are of record significance and the best achievements are shown.

The Modern Pentathlon (Riding, Fencing, Shooting, Swimming and Running) was inaugurated into the Olympic Games at Stockholm in 1912. The Modern Pentathlon Association of Great Britain was formed in 1922.

Most titles World

The record number of world titles won is six by András Balczó (b. 16 Aug 1938) (Hungary) in 1963, 1965–7 and 1969. In Olympic years this title also rates as the world title, thus giving Balczó his sixth in 1972. The best British placing is the bronze medal by Sgt. (now Capt) Jeremy Robert 'Jim' Fox, MBE (b. 19 Sept 1941) at Mexico in 1975.

Most titles Olympic

The greatest number of Olympic gold medals won is three by

HIGHEST SCORES (in major competition)

	Performance	Points	Name and Place	Date
WORLD Shooting	200/200	1132	Charles Leonard (USA) Berlin, Germany	3 Aug 1936
	200/200	1132	Daniell Massala (Italy) Jönköping, Sweden	21 Aug 1978
	200/200	1132	George Horvath (Sweden) Moscow, USSR	22 July 1980
Swimming	3 min 13.95 sec	1346	Ivar Sieniega (Mexico) Moscow, USSR	23 July 1980
BRITISH Shooting	197/200	1085	Robert Lawson Phelps MBE Leipzig, E. Germany	21 Sept 1965
	3 min 20.5 sec	1088	Richard Phelps, Walton on Thames, Surrey	24 July 1982

1 points not given in 1988 Olympic Games



Mats Wilander (b. 22 Aug 1964) (Sweden) became the youngest ever men's singles champion of a major tournament when he won the French Championships in 1982 at 17 years 288 days, 87 days younger than Bjorn Borg in 1974. (Steve Powell, *All-Sport*)

András Balczó, a member of the winning team in 1960 and 1968 and the 1972 individual champion. Lars Hall (b. 30 Apr 1927) (Sweden) has uniquely won two individual Championships (1952 and 1956). Balczó has won a record number of five medals (three gold and two silver). The best British performance is the team gold medal at Montreal, Canada 18–22 July 1976 by Jim Fox, Adrian Philip Parker and Daniel Nightingale. The best individual placing is fourth by Jim Fox at Munich in 1972.

Probably the greatest margin of victory was by William Oscar Guernsey Grut (b. 17 Sept 1914) (Sweden) in the 1948 Games in London, when he won three events and was placed fifth and eighth in the other two events.

Most titles British

The pentathlete with most British titles is Jim Fox, with ten (1963, 1965–8, 1970–4).

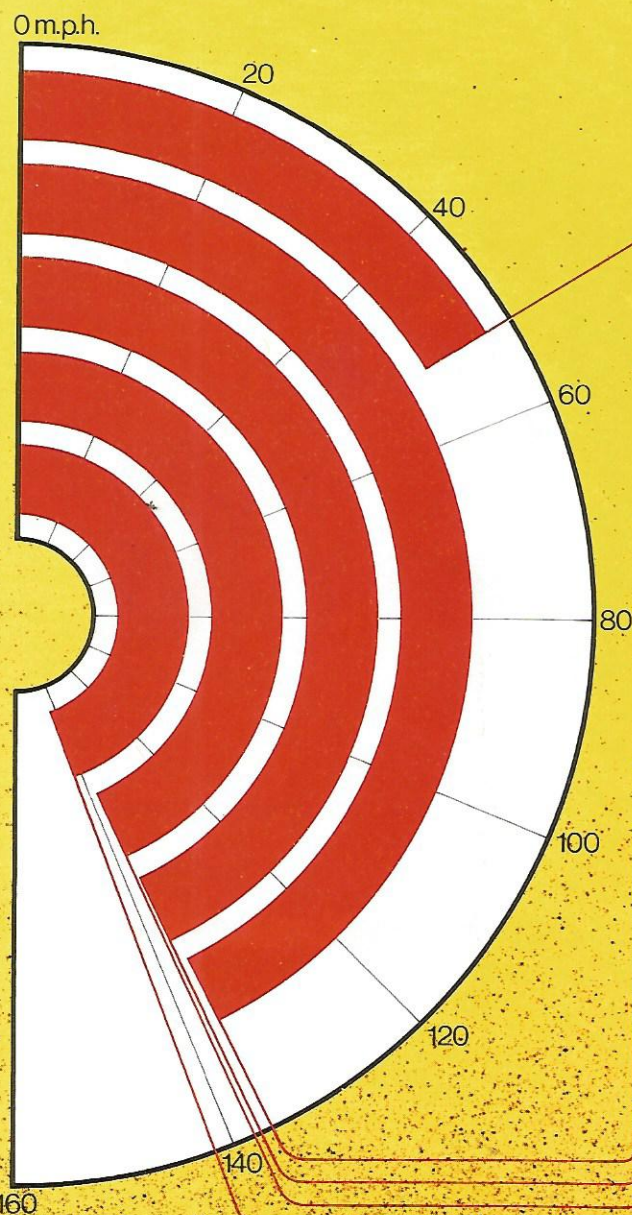
MOTORCYCLE RACING

See also The Guinness Book of Motorcycling Facts and Feats by L. J. K. Setright, published by Guinness Superlatives Ltd. price £7.95, and The Guinness Guide to Motorcycling by Peter Carrick, published by Guinness Superlatives at £10.95

Earliest race

The first motorcycle race was held over a mile 1.6 km on an oval track at Sheen House, Richmond, Surrey, on 29 Nov 1897, won by Charles Jarrott (1877–1944) on a Fournier. The oldest motorcycle races in the world are the Auto-Cycle Union Tourist Trophy (TT) series, first held on the 15.81 mile 25.44 km 'Peel' ('St John's') course in the Isle of Man on 28 May 1907, and still run in the island on the 'Mountain' circuit (see p. 303).

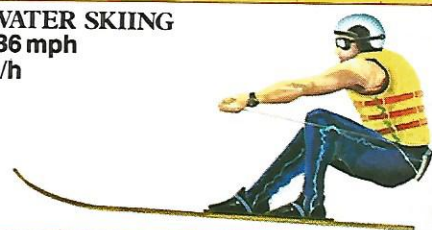
ENGINE POWERED SPEED RECORDS IN SPORT



52 SPEEDWAY
57 mph
84-60 km/h



136 WATER SKIING
36 mph
219-44 km/h
p 336



137 MOTOR CYCLING
150 mph
220-721 km/h
p 302



137 POWER BOAT
96 mph
221-02 km/h
p 311



141 MOTOR RACING
87 mph
228-31 km/h
p 304



(below) Joey Dunlop pushing his bike after running out of petrol at Governors' Bridge in the Isle of Man TT Classic in 1981, after setting the lap record. (Sporting Pictures (UK) Ltd)



Fastest circuits World

The highest average lap speed attained on any closed circuit is 160.288 mph 257,958 km/h by Yvon du Hamel (Canada) (b. 1941) on a modified 903 cc four-cylinder Kawasaki Z1 at the 31 degree banked 2.5 mile 4.02 km Daytona International Speedway, Florida, USA, in March 1973. His lap time was 56.149 sec.

The fastest road circuit is the Francorchamps circuit near Spa, Belgium. It is 8.74 miles 14,120 km in length and was lapped in 3 min 50.3 sec (average speed 137.150 mph 220,721 km/h) by Barry Stephen Frank Sheene, MBE (b. Holborn, London, 11 Sept 1950) on a 495 cc four-cylinder Suzuki during the Belgian Grand Prix on 3 July 1977.

Fastest circuits United Kingdom

The fastest circuit in the United Kingdom is the Portstewart-Coleraine-Portrush circuit in Londonderry, N. Ireland. The lap record (10.1 mile 16.26 km lap) is 4 min 53.2 sec (average speed 124.060 mph 199,655 km/h) by John Glyn Williams (1946-78)

on a 747 cc four-cylinder Yamaha on lap five of the 750 cc event of the North West 200, on 21 May 1977.

The lap record for the outer circuit (2.767 miles 4,453 km) at the Brooklands Motor Course, near Weybridge, Surrey (open between 1907 and 1939) was 80.0 sec (average speed 124.51 mph 200.37 km/h) by Noel Baddow 'Bill' Pope (later Major) (1909-71) of the United Kingdom on a Brough Superior powered by a supercharged 996 cc V-twin '8-80' JAP engine developing 110 bhp, on 4 July 1939.

Fastest races World

The fastest track race in the world was held at Grenzlandring, near Wegberg, W. Germany in 1939. It was won by Georg 'Schorsch' Meier (b. Germany, 9 Nov 1910) at an average speed of 134 mph 215 km/h on a supercharged 495 cc flat-twin BMW.

The fastest road race is the 500 cc Belgian Grand Prix held on the Francorchamps circuit (see p. 302). The record time for this ten lap (87.74 mile 141.20 km) race is 38 min 58.5 sec (average speed 135.068 mph 217.370 km/h) by Barry Sheene, on a 495 cc four-cylinder Suzuki, on 3 July 1977.

Fastest races United Kingdom

The fastest race in the United Kingdom is the 750 cc event of the North-West 200 held on the Londonderry circuit (see p. 302). The record lap speed is 127.63 mph 205.395 km/h by Tom Herron (1949-79) on a 747 cc Yamaha in 1978.

Longest race

The longest race is the Liège 24 hr. The greatest distance ever covered is 2761.9 miles 4444.8 km (average speed 115.08 mph 185.20 km/h) by Jean-Claude Chemarin and Christian Leon, both of France, on a 941 cc four-cylinder Honda on the Francorchamps circuit on 14-15 Aug 1976.

Longest circuit

The 37.73 mile 60.72 km 'Mountain' circuit, over which the principal TT races have been run since 1911 (with minor amendments in 1920), has 264 curves and corners and is the longest used for any motorcycle race.

Most successful riders Tourist Trophy

The record number of victories in the Isle of Man TT races is 14 by Stanley Michael Bailey Hailwood, MBE, GM (1940-81) between 1961 and 1979. The first man to win three consecutive TT titles in two events was James A. Redman, MBE (Rhodesia) (b. Hampstead, London, 8 Nov 1931). He won the 250 cc and 350 cc events in 1963-5. Mike Hailwood is the only man to win three events in one year, in 1961 and 1967.

The TT circuit speed record is 115.40 mph 185.71 km/h by Joey Dunlop on a Honda in the Isle of Man Classic on 12 June 1981.

Most successful riders World championships

The most world championship titles (instituted by the *Fédération Internationale Motocycliste* in 1949) won are 15 by Giacomo Agostini (b. Lovere, Italy, 16 June 1942), the 350 cc in 1968-74, and 500 cc in 1966-72, 1975. He is the only man to win two world championships in five consecutive years (350 and 500 cc titles in 1968-72).

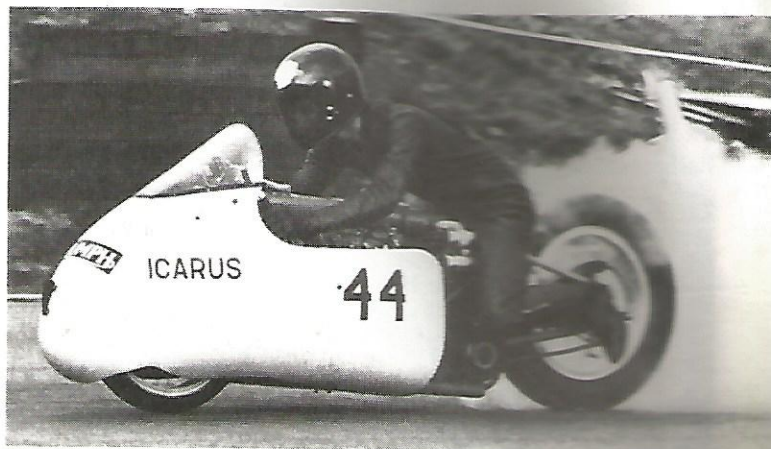
Agostini won 122 races in the world championship series between 24 Apr 1965 and 29 Aug 1976, including a record 19 in 1970, also achieved by Mike Hailwood in 1966. Klaus Enders (Germany) (b. 1937) won six world side-car titles, 1967, 1969-70, 1972-4.

Most successful riders Trials

Yrjö Vesterinen (Finland) won a record three World trials championships, 1976-8. Samuel Hamilton Miller (b. Belfast, N. Ireland, 11 Nov 1935) won eleven A-CU Solo Trials Drivers' Stars in 1959-69.

Most successful riders Moto-cross and Scrambles

Joël Robert (b. Belgium, 11 Nov 1943) won six 250 cc moto-cross world championships (1964, 1968-72). Between 25 Apr 1964 and 18 June 1972 he won a record fifty 250 cc Grands Prix. He became the youngest moto-cross world champion on 12 July 1964 when he won the 250 cc championship aged 20 years 244 days.



Roy Daniel set the British motorcycle speed records in 1978 for a flying start at both 440 yards (191.897 mph) and 1 mile (188.45 mph) (*Yorkshire Post*)

Jeffrey Vincent Smith, MBE (b. Colne, Lancashire, 14 Oct 1934) won nine A-CU 500 cc Scrambles' Stars in 1955-6, 1960-5 and 1967.

Most successful machines

Italian MV-Agusta machines won 37 world championships between 1952 and 1973, and 276 world championship races between 1952 and 1976. Japanese Honda machines won 29 world championship races and five world championships in 1966. In the seven years they contested the championship (1961-7) their annual average was 20 race wins.

Youngest and oldest world champions

Alberto 'Johnny' Cecotto (b. Caracas, Venezuela, 25 Jan 1956) is the youngest to win a world championship. He was 19 years 211 days when he won the 350 cc title on 24 Aug 1975. The oldest was Hermann-Peter Müller (1909-76) of W. Germany, who won the 250 cc title in 1955 aged 46.

Highest speeds

Official world speed records must be set with two runs over a measured distance made in opposite directions within a time limit. This limit is 1 hr for FIM records and 2 hr for AMA records.

Donald A. Vesco (b. Loma Linda, Calif, USA, 8 Apr 1939) riding his 21 ft 6.4 m long *Lightning Bolt* streamliner, powered by two 1016 cc Kawasaki engines on Bonneville Salt Flats, Utah, USA on 28 Aug 1978 set AMA and FIM absolute records with an overall average of 318.598 mph 512.733 km/h and had a fastest run at an average of 318.66 mph 513.165 km/h.

The highest speed achieved over two runs in the UK is 191.897 mph 308.82 km/h by Roy Francis Daniel (b. 7 Dec 1938) on his 998 cc supercharged twin-engined RDS Triumph at Elvington, N. Yorks on 29 July 1978. His average time for the flying 440 yd 402 m was 4.69 sec.

The world record for 1 km 1,093.6 yd from a standing start is 16.68 sec by Henk Vink (b. 24 July 1939) (Netherlands) on his supercharged 984 cc four-cylinder Kawasaki, at Elvington Airfield, North Yorkshire on 24 July 1977. The faster run was made in 16.09 sec.

The world record for 440 yd 402 m from a standing start is 8.805 sec by Henk Vink on his supercharged 1132 cc four-cylinder Kawasaki at Elvington Airfield, North Yorkshire on 23 July 1977. The faster run was made in 8.55 sec.

The fastest time for a single run over 440 yd 402 m from a standing start is 7.08 sec by Bo O'Brecht (USA) riding a supercharged 1200 cc Kawasaki-based machine at Ontario, California, in 1980. The highest terminal velocity recorded at the end of a 440 yd 402 m run from a standing start is 199.55 mph 321.14 km/h by Russ Collins (USA) at Ontario on 7 Oct 1978.

MOTOR RACING

Additional information can be obtained from The Guinness Guide to Grand Prix Motor Racing by Eric Dymock published by Guinness Superlatives Ltd at £11.95.

Earliest races

There are various conflicting claims, but the first automobile race was the 201 mile 323 km Green Bay to Madison, Wisconsin, USA run in 1878 won by an Oshkosh steamer. In 1887 Count Jules Felix Philippe Albert de Dion de Malfiance (1856-1946) won the *La Velocipede* 19.3 miles 31 km race in Paris in a De Dion steam quadricycle in which he is reputed to have exceeded 37 mph 59 km/h. The first 'real' race was from Paris to Bordeaux and back (732 miles 1178 km) on 11-13 June 1895. The first to finish was Emile Levassor (1844-97) of France, in a Panhard-Levassor two-seater, with a 1.2 litre Daimler engine developing 3½ hp. His time was 48 hr 47 min (average speed 15.01 mph 24.15 km/h). The first closed circuit race was held over five laps of a mile 1.6 km dirt track at Narragansett Park, Cranston, Rhode Island, USA, on 7 Sept 1896, won by A. H. Whiting, driving a Riker electric.

The oldest race in the world, still regularly run, is the RAC Tourist Trophy, first staged on 14 Sept 1905, in the Isle of Man. The oldest continental race is the French Grand Prix first held on 26-27 June 1906. The Coppa Florio, in Sicily, has been irregularly held since 1900.

Fastest circuits

The highest average lap speed attained on any closed circuit is 250.958 mph 403.878 km/h in a trial by Dr Hans Liebold (b. 12 Oct 1926) (Germany) who lapped the 7.85 mile 12.64 km high-speed track at Nardo, Italy in 1 min 52.67 sec in a Mercedes-Benz C111-IV experimental coupé on 5 May 1979. It was powered by a V8 engine with two KKK turbochargers with an output of 500 hp at 6,200 rpm.

The highest average race lap speed for a closed circuit is 214.158 mph 344.654 km/h by Mario Gabriele Andretti (USA) (b. Trieste, Italy, 28 Feb 1940) driving a 2.6 litre turbocharged Viceroy Parnelli-Offenhauser on the 2 mile 3.2 km, 22 degree banked oval at Texas World Speedway, College Station, Texas, USA on 6 Oct 1973.

The fastest road circuit was the Francorchamps circuit near Spa, Belgium, then 8.761 miles 14.100 km in length which was lapped in 3 min 13.4 sec (average speed 163.086 mph 262.461 km/h) on 6 May 1973, by Henri Pescarolo (b. Paris, France, 25 Sept 1942) driving a 2993 cc V12 Matra-Simca MS670 Group 5 sports car. The race lap average speed record at Berlin's AVUS track was 171.75 mph 276.38 km/h by Bernd Rosemeyer (Germany) (1909-38) in a 6-litre V16 Auto Union in 1937.

The Motor Industry Research Association (MIRA) High Speed Circuit (2.82 mile 4.53 km lap with 33-degree banking on the bends) at Lindley, Warwickshire, was lapped in 1 min 2.8 sec (average speed 161.655 mph 260.158 km/h) by David Wishart Hobbs (b. Leamington, Warwickshire, 9 June 1939) driving a 4994 cc V12 Jaguar XJ13 Group 6 prototype sports car in April 1967.

Fastest races

The fastest race was the NASCAR Grand National 125 mile 201 km (a qualifying event for the Daytona 500) on the 2.50 mile 4.02 km, 31-degree banked tri-oval at Daytona International Speedway, Florida, USA. The record time for this race is 40 min 55 sec (average speed 183.295 mph 294.985 km/h) by William Caleb 'Cale' Yarborough (b. 27 Mar 1939) of Timmonsville, S Carolina, USA, driving a 1969 Mercury V8, on 19 Feb 1970.

The fastest road race was the Francorchamps 1000 km sports car race held on the Francorchamps circuit. The record time for this 71-lap (622.055 mile 1001.100 km) race was 4 hr 1 min 9.7 sec (average speed 154.765 mph 249.070 km/h) by Pedro Rodriguez (1940-71) of Mexico, and Keith Jack 'Jackie' Oliver (b. Chadwell Heath, London, 14 Aug 1942) driving a 4998 cc flat-12 Porsche 917K Group 5 sports car, on 9 May 1971.

Fastest pit stop

Robert William 'Bobby' Unser (b. Colorado Springs, Colorado, USA, 20 Feb 1934) took 4 sec to take on fuel on lap 10 of the Indianapolis 500 on 30 May 1976.

Most race wins by a driver

The most successful driver in terms of race wins is Richard Petty (b. Randleman, N. Carolina, USA, 2 July 1937) with 253 NASCAR Grand National wins between 1960 and 1981. His best season was 1967 with 27 wins.

WORLD CHAMPIONSHIP GRAND PRIX MOTOR RACING

Drivers Most successful

The World Drivers' Championship, inaugurated in 1950, has been won a record five times by Juan-Manuel Fangio (b. Mar del Plata, Argentina, 24 June 1911) in 1951, 1954-7. He retired in 1958, after having won 24 Grand Prix races (two shared).

The most Grand Prix victories is 27 by John Young 'Jackie' Stewart, OBE (b. Milton, Dunbartonshire, 11 June 1939) between 12 Sept 1965 and 5 Aug 1973. James 'Jim' Clark, OBE (1936-68) of Scotland holds the record for Grand Prix victories in one year with seven in 1963. He won a record 61 Formula One and Formula Libre races between 1959 and 1968. The most Grand Prix starts is 176 (out of a possible 184) between 18 May 1958 and 1 Jan 1975 by the British driver Norman Graham Hill, OBE (1929-75). Between 20 Nov 1960 and 5 Oct 1969 he took part in 90 consecutive Grands Prix.

Oldest and youngest

The youngest world champion was Emerson Fittipaldi (b. Maringa, Paulo, Brazil, 12 Dec 1946) who won his first world championship on 10 Sept 1972 aged 25 years 273 days. The oldest world champion was Juan-Manuel Fangio who won his last world championship on 18 Aug 1957 aged 46 years 55 days.

The youngest Grand Prix winner was Bruce Leslie McLaren (1937-70) of New Zealand, who won the United States Grand Prix at Sebring, Florida, USA, on 12 Dec 1959 aged 22 years 255 days. The oldest Grand Prix winner (in pre-World Championship days) was Tazio Giorgio Nuvolari (1892-1953) of Italy, who won the Albi Grand Prix at Albi, France on 14 July 1946 aged 54 years 240 days. The oldest Grand Prix driver was Louis Andre Chiron, O. St-C., L.d'H., C.d'I., (Monaco) (1899-1955) who finished 6th in the Monaco Grand Prix on 22 May 1955 aged 55 years 292 days. The youngest Grand Prix driver was Michael Christopher Thackwell (b. New Zealand, 30 Mar 1961) who took part in the Canadian GP on 28 Sept 1980, aged 19 years 281 days).

Fastest circuit

The fastest World championship GP circuit in current use is the 2.932 miles 4.719 km circuit at Silverstone, Northamptonshire, England opened in 1948. The race lap record is 1 min 14.4 sec (average speed 141.87 mph 228.31 km/h) by Gianclaudio 'Claudio' Regazzoni (Switzerland) (b. 5 Sept 1939) driving a Sande Williams FW07 on 14 July 1979. The practice lap record is 1 min 11.00 sec (148.66 mph 239.24 km/h) by René Arnoux (France) (b. 4 July 1948) in a Renault Elf Turbo RE30 on 17 Jan 1981. A test run of 1 min 10.8 sec (average speed 149.08 mph 239.92 km/h) was recorded by Nelson Piquet Souto Maior (Brazil) in a Brabham-Cosworth BT48 on 17 June 1980.

Fastest race

The fastest average speed for a Grand Prix race is 138.80 mph 223.37 km/h for a time of 1 hr 26 min 11.17 sec in the British Grand Prix by Clay Regazzoni (Switzerland) driving a Sande Williams FW07 over 68 laps (199.37 miles 320.85 km) at Silverstone on 14 July 1979.

Toughest circuit

The most gruelling and slowest Grand Prix circuit is that for the Monaco Grand Prix (first run on 14 Apr 1929), round the streets and the harbour of Monte Carlo. It is 2.058 miles 3.312 km in length and has eleven pronounced corners and several sharp changes of gradient. The race is run over 76 laps (156.4 miles 251.7 km) and involves on average about 1600 gear changes. The record time for the race is 1 hr 54 min 11.259 sec (average speed 82.21 mph 132.30 km/h) by Riccardo Patrese (b. Italy, 17 Apr 1958) in a Williams FW18C on 12 June 1985.

Motor Racing

1954) in a Brabham-Ford on 23 May 1982. The race lap record is 1 min 26.35 sec (average speed 85.79 mph 138,073 km/h) by Patrese in 1982. The practice lap record is 1 min 23.28 sec (average speed 88.96 mph 143,17 km/h) by René Arnoux in a Renault Elf Turbo on 22 May 1982.

Closest finish

The closest finish to a World Championship race was in the Italian Grand Prix at Monza on 5 Sept 1971. Just 0.61 sec separated winner Peter Gethin (GB) from the fifth placer.

LE MANS

The greatest distance ever covered in the 24 hour *Grand Prix d'Endurance* (first held on 26–27 May 1923) on the old Sarthe circuit at Le Mans, France is 5333,724 km 3314.222 miles by Dr Helmut Marko (b. Graz, Austria, 27 Apr 1943) and Jonkheer Gijs van Lennep (b. Bloemendaal, Netherlands, 16 Mar 1942) driving a 4907 cc flat-12 Porsche 917K Group 5 sports car, on 12–13 June 1971. The record for the current circuit is 5044.43 km 3134.46 miles by Didier Pironi (b. 26 Mar 1952) and Jean-Pierre Jaussaud (b. 3 June 1937) (France) (av. speed 210,188 km/h 130.60 mph) in an Alpine Renault on 10–11 June 1978. The race lap record (8.475 mile 13.64 km lap) is 3 min 34.2 sec (average speed 142.44 mph 229,244 km/h) by Jean Pierre Jabouille (b. France, 1 Oct 1942) driving an Alpine Renault on 11 June 1978. The practice lap record is 3 min 27.6 sec (av. speed 146.97 mph 236,53 km/h) by Jacques-Bernard 'Jacky' Ickx (b. Belgium, 1 Jan 1945) in a turbocharged 2.1 litre Porsche 936/78 on 7 June 1978.

Most wins

The race has been won by Ferrari cars nine times, in 1949, 1954, 1958 and 1960–5. The most wins by one man is six by Jacky Ickx, 1969, 1975–7 and 1981–2.

British wins

The race has been won 13 times by British cars: Bentley in 1924 and 1927–30, Lagonda in 1935, Jaguar in 1951, 1953 and 1955–7, Aston Martin in 1959 and a Gulf-Ford in 1975.

INDIANAPOLIS 500

The Indianapolis 500 mile 804 km race (200 laps) was inaugurated in the USA on 30 May 1911. The most successful driver has been Anthony Joseph 'A.J.' Foyt, Jr (b. Houston, Texas, USA, 16 Jan 1935) who won in 1961, 1964, 1967 and 1977. The record time is 3 hr 4 min 5.54 sec (average speed 162.962 mph 262,261 km/h) by Mark Donohue, Jr driving a 2595 cc 900 bhp turbocharged Sunoco McLaren M16B-Offenhauser on 27 May 1972. The race lap record is 46.41 sec (average speed 193.924 mph 312,090 km/h) by Mario Andretti (b. Trieste, 28 Feb 1940) (USA), driving a Penske-Cosworth PC6 in 1978. The qualifying lap record speed is 208.7 mph 335.9 km/h by Rick Mears (USA) driving a Penske-Cosworth on 21 May 1982.

The record prize fund was \$1,609,375 in 1981. The individual prize record is \$318,819 by Johnny Rutherford on 25 May 1980.

HILL CLIMBING

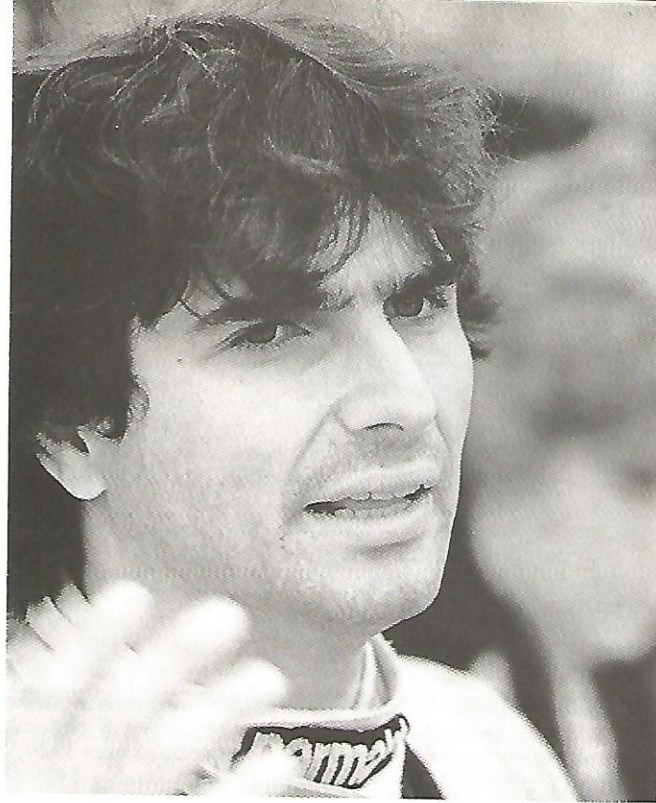
The Pikes Peak Auto Hill Climb, Colorado, USA (instituted 1916) has been won 13 times by Bobby Unser between 1956 and 1974 (ten championship, two stock and one sports car title). In the 1979 race Dick Dödge set a record time of 11 min 54.18 sec in a Chevrolet powered Wells Coyote for the 12.42 mile 19.98 km course rising from 9402 ft to 14,110 ft 2865–4300 m through 157 curves.

The British National Hill Climb Championship (inaugurated in 1947) has been won six times by Anthony Ernest Marsh (b. Stourbridge, West Midlands, 20 July 1931) 1955–7, 1965–7. Raymond Mays, CBE (1899–1980) won the Shelsley Walsh hill climb, near Worcester, 19 times between 1923 and 1950.

RALLIES

Earliest

The earliest long rally was promoted by the Parisian daily *Le Matin* in 1907 from Peking, China to Paris over about 7500 miles 12 000 km on 10 June. The winner, Prince Scipione Borghese (1871–1927), of Italy, arrived in Paris on 10 Aug 1907 in his



Nelson Piquet, the 1981 world champion, has also lapped Silverstone at a record speed of 147.08 mph. (*All-Sport*)

40 hp Itala accompanied by his chauffeur, Ettore, and Luigi Barzini.

Longest

The longest ever rally was the *Singapore Airlines* London-Sydney Rally over 19,329 miles 31 107 km from Covent Garden, London on 14 Aug 1977 to Sydney Opera House, won on 28 Sept 1977 by Andrew Cowan, Colin Malkin and Michael Broad in a Mercedes 280E. The longest held annually is the Safari Rally (first run 1953 through Kenya, Tanzania and Uganda) which is up to 3874 miles 6234 km long, as in the 17th Safari held between 8 and 12 Apr 1971. It has been won a record five times by Shekhar Mehta (b. Uganda) in 1973, 1979–82.

Monte Carlo

The Monte Carlo Rally (first run 1911) has been won a record four times by Sandro Munari (b. 1940) (Italy) in 1972, 1975, 1976 and 1977. The smallest car to win was an 851 cc Saab driven by Erik Carlsson (b. Sweden 5 Mar 1929) and Gunnar Häggbom of Sweden on 25 Jan 1962, and by Carlsson and Gunnar Palm on 24 Jan 1963.

Britain

The RAC Rally (first held 1932) has been recognised by the FIA since 1957. Most wins have been three each by Erik Carlsson driving a Saab in 1960–2, Timo Makinen (Finland) (b. 18 Mar 1938) in a Ford Escort, 1973–5, and Hannu Mikkola (Finland) in a Ford Escort, 1978–9 and an Audi Quattro, 1981.

DRAGGING

Piston engined

The lowest elapsed time recorded by a piston-engined dragster is 5.637 sec (terminal velocity 250.69 mph 403.45 km/h) by Donald Glenn 'Big Daddy' Garlits (b. 1932) of Seffner, Florida, USA driving his rear-engined AA/F dragster, powered by a 7948 cc supercharged Dodge V8 engine, during the National Hot Rod Association's Super-nationals at Ontario Motor Speedway, Ontario, California, USA, on 11 Oct 1975. The highest terminal velocity recorded is 255.58 mph 411.31 km/h by Shirley Muldowney (b. 1940) (USA) at Pomona, Cal., in January 1979.

The world record for two runs in opposite directions over 440 yd 402 m from a standing start is 6.70 sec by Dennis Victor Priddle (b. 1945) of Yeovil, Somerset, driving his 6424 cc supercharged Chrysler dragster developing 1700 bhp using nitromethane and methanol, at Elvington Airfield, North Yorkshire on 7 Oct 1972. The faster run was made in 6.65 sec.

Rocket or jet-engined

The highest terminal velocity recorded by any dragster is 392.54 mph 631.732 km/h by Kitty O'Neil (USA) at El Mirage Dry Lake, California, USA on 7 July 1977. The lowest elapsed time was 3.72 sec also by Kitty O'Neil on the same occasion.

Terminal velocity is the speed attained at the end of a 440 yd 402 m run made from a standing start and elapsed time is the time taken for the run.

Highest speeds

See also pp. 138–140.

The world speed record for compression ignition engined cars is 190.344 mph 306.328 km/h (average of two runs in opposite directions over a measured mile 1.6 km) by Robert Havemann of Eureka, California, USA driving his *Corsair* streamliner, powered by a turbocharged 6981 cc 6-cylinder GMC 6-71 diesel engine developing 746 bhp, at Bonneville Salt Flats, Utah, USA, in August 1971. The faster run was made at 210 mph 337 km/h.

The most successful land speed record breaker was Major Sir Malcolm Campbell (1885–1948) of the United Kingdom. He broke the official record nine times between 25 Sept 1924, with 146.157 mph 235.216 km/h in a Sunbeam, and 3 Sept 1935, when he achieved 301.129 mph 484.620 km/h in the Rolls-Royce engined *Bluebird*.

Duration record

The greatest distance ever covered in one year is 400 000 km 248,548.5 miles by François Lecot (1879–1949), an innkeeper from Rochetaillée, near Lyon, France, in a 1900 cc 66 bhp Citroën 11 sedan, mainly between Paris and Monte Carlo, from 22 July 1935 to 26 July 1936. He drove on 363 of the 370 days allowed.

MOUNTAINEERING

See also Mountains and Mountaineering Facts and Feats by Edward Pyatt published by Guinness Superlatives Ltd at £8.95

Origins

Although bronze-age artifacts have been found on the summit of the Riffelhorn, Switzerland (9605 ft 2927 m), mountaineering, as a sport, has a continuous history dating back only to 1854. Isolated instances of climbing for its own sake exist back to the 13th century. The Atacaménans built sacrificial platforms near the summit of Llullaillaco (22,058 ft 6723 m) in late pre-Columbian times c. 1490. The earliest recorded rock climb in the British Isles was of Stac na Biorrach, St Kilda (236 ft 71.9 m) by Sir Robert Moray in 1698.

Mount Everest

Mount Everest (29,028 ft 8848 m) was first climbed at 11.30 a.m. on 29 May 1953, when the summit was reached by Edmund Percival Hillary (b. 20 July 1919), created KBE, of New Zealand, and the Sherpa, Tenzing Norgay (b. as Namgyal Wangdi, in Nepal in 1914, formerly called Tenzing Khumjung Bhutia), who was awarded the GM. The successful expedition was led by Col (later Hon Brigadier) Henry Cecil John Hunt, CBE, DSO (b. 22 June 1910), who was created a Knight Bachelor in 1953, a life Baron on 11 June 1966 and KG on 23 Apr 1979.

A total of 122 climbers have succeeded to June 1982 including six who have done it twice. Franz Oppurg (1948–81) (Austria) was the first to make the final ascent solo on 14 May 1978 while Reinhold Messner (Italy) was the first to make the entire climb solo on 20 Aug 1980. Messner and Peter Habeler (b. 22 July 1942) (Austria) made the first entirely oxygen-less ascent on 8 May 1978. The first Britons to reach the summit were Douglas Scott (b. 29 May 1941) and Dougal Haston (1940–77) on 24 Sept 1975. Four women have reached the summit, the first being Junko Tabei (b. 22 Sep 1939) (Japan) on 16 May 1975. The oldest person was Dr Gerhard Schmatz (W. Germany) (b. 5 June 1929) aged 50 years 88 days on 1 Oct 1979.

Reinhold Messner, with his ascent of Kangchenjunga in 1982, became the first person to climb the world's three highest mountains, having earlier reached the summits of Everest and K2. He has successfully scaled a record seven of the world's 14 mountains of over 8000 m 26,250 ft.

Greatest walls

The highest final stage in any wall climb is that on the south face of Annapurna I (26,545 ft 8091 m). It was climbed by the British expedition led by Christian John Storey Bonington, CBE (b. 19 Aug 1934) when from 2 Apr to 27 May 1970, using 18,000 m of rope, Donald Whillans (b. 1934) and Dougal Haston scaled to the summit. The longest wall climb is on the East Flank from the base camp at 3560 m 11,680 ft to the South Face 8042 m 26,384 ft of Nanga Parbat—a vertical ascent of 4482 m 14,704 ft. This was scaled by the Austro-Germano-Italian expedition led by Dr Karl Maria Herrligkoffer in April 1970.

Europe's greatest wall is the 6,600 ft 2000 m north face of the Eigerwand (Ogre wall) first climbed by Heinrich Harrer and Fritz Kasperek of Austria and Anderl Heckmair and Wiggerl Vörg of Germany on 21–24 July 1938. The north-east face of the Eiger had been climbed on 20 Aug 1932 by Hans Lauper, Alois Zurcher, Alexander Graven and Josef Knubel. The greatest alpine solo climb was that of Walter Bonatti (b. Bergamo, Italy, 22 June 1930) of the South West Pillar of the Dru, Montblanc, now called the Bonatti Pillar, with five bivouacs in 126 hr 7 min on 17–22 Aug 1955.

The most demanding free climbs in the world are those routes 5.13, the premier location for these being in the Yosemite Valley, California, USA. The top routes in Britain are grade E7.7b, which relates closely to 5.13.

Highest bivouac

Douglas Scott and Dougal Haston bivouacked in a snow hole 28,700 ft 8747 m on the South Summit of Everest on the night of 24 Sept 1975.

MOUNTAIN RACING**Mount Cameroun**

Ndumbe Evambe Amos descended from the summit 13,350 m 4379 m to Buea at 3000 ft 914 m in 78 min 4 sec on 26 Feb 1980, achieving a vertical rate of 132 ft 40.4 m per min. In winning the third successive year, Father Walter Stifter (Italy) ran to the summit and back in a record 4 hr 18 min 16 sec in 1978.

Ben Nevis

The record time for the race from Fort William Town Park to the Cairn on the summit of Ben Nevis (4418 ft 1346.6 m) and return is 1 hr 26 min 55 sec by David Cannon (b. 7 Aug 1950) (Gateshead H) on 4 Sept 1976. The feminine record is 1 hr 53 min 23 sec by Ros Coats (Lochaber AC) (b. 17 Jan 1950) on 1 Sept 1978. The full course by the bridle path is about 14 miles 22 km but distance is saved by crossing the open hillside. The mountain was first climbed c. 1720 and the earliest run, by William Swan in 2 hr 41 min, was in 1895.

Snowdon

The Snowdon Race (Ras Yr Wyddfa) has been run annually since 1976 from Llanberis to the summit of Snowdon and back. The fastest time is 1 hr 4 min 28 sec by Richard Spencer White (b. 13 Oct 1945) on 15 July 1978. The ladies record is 1 hr 24 min 49.9 sec by Ros Coats on 18 July 1981.

FELL RUNNING

In the 1972 Skiddaw Fell Race (3053 ft to 250 ft 930 to 107 m) a vertical descent rate of 128 ft 39 m per min was achieved by George Jeffrey Norman (b. 6 Feb 1945) (Altrincham AC).

Joss Naylor MBE (b. 10 Feb 1936) won the Ennerdale mountain race (23 miles 37 km) nine times, 1968–1977. The fastest time was 3 hr 21 min 4 sec by Billy Bland (Keswick AC) in 1980.

The Yorkshire three peak record for the current 23 mile course is 2 hr 37 min 30 sec by John Wild (b. 13 Feb 1953) on 25 Apr 1982. The record for the former, 22 mile, course is 2 hr 29 min 53 sec by Jeff Norman on 28 Apr 1974.



Shekhar Mehta of Kenya on his way to his record fifth win in the Safari Rally in 1982 in his Nissan-Datsun Violet GTS car. (*All-Sport*)

The Lakeland 24-hr record is 72 peaks achieved by Joss Naylor, on 22–23 June 1975. He covered 105 miles 168 km with 37,000 ft 11 227 m of ascents and descents in 23 hr 11 min.

The record for traversing the 85 mile 136.79 km cross-country route of the nine 4000 ft 1219.2 m Scottish Munros is 22 hr 33 min by J. S. 'Stan' Bradshaw (Clayton-le-Moors Harriers) on 30 May 1982.

The 'Three Thousander' record over the 14 Welsh peaks of over 3000 ft 914 m is 4 hr 46 min 22 sec with pacemakers, by Joss Naylor on 17 June 1973 despite misty conditions.

The Ten Peaks run is from Burnthwaite Farm, Wasdale Head, Cumbria to the top of Skiddaw via England's nine other highest mountains and tops. The record time is 6 hr 56 min by Joss Naylor, wholly on foot, in May 1975.

Ernest Roger Baumeister (Dark Peak Fell Runners Club) (b. 17 Dec 1941) of Sheffield, S. Yorkshire, twice ran the 42 Lakeland Peaks, known as a Bob Graham Round, in 46 hr 34½ min on 30 June–1 July 1979, covering a total distance of 144 miles 231 km and 54,000 ft 16 459 m of ascent and descent. The record for the Bob Graham Round is 13 hr 53 min by Billy Bland, 34, on 19 June 1982.

Three Peaks record

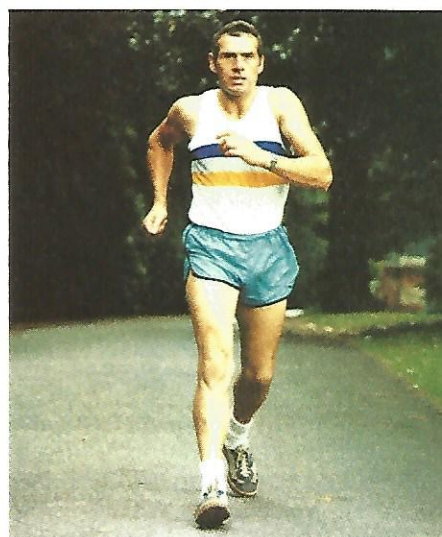
The Three Peaks route from sea level at Fort William, Inverness-shire, to sea level at Caernarvon, via the summits of Ben Nevis, Scafell Pike and Snowdon, was covered by Metropolitan Police Constable Arthur Eddleston BEM (b. 6 Dec 1939) (Cambridge H) who walked it in 5 days 23 hr 37 min on 11–17 May 1980. Peter and David Ford, David Robinson, Kevin

Duggan and John O'Callaghan, of Luton and Dunstable, ran the distance in relay in 54 hr 39 min 14 sec on 7–9 Aug 1981.

The fastest individual total time for climbing the three mountains is 4 hr 16 min by Joss Naylor on 8–9 July 1971.

Pennine Way

The record for traversing the 271 mile 436 km long Pennine Way is 3 days 42 min by Brian Harney (Rotherham H) (b. 11 May 1945) on 9–12 Aug 1979.



In 1980 Arthur Eddleston set his second Three Peaks walking record, after Ann Sayer had recorded 7 days 31 minutes in 1979, still the women's best.

PROGRESSIVE MOUNTAINEERING ALTITUDE RECORDS (See also p. 69)

ft	m	Mountain	Climbers	Date
17,887	5452	Popocatepetl, Mexico	Francisco Montano	1521
18,400	5608	Mana Pass, Zaskar Range	A. de Andrade, M. Morques	July 1624
18,893	5758	On Chimborazo, Ecuador	Dr Alexander Von Humboldt, Aimé Bonpland, Carlos Montufar	23 June 1802
19,411	5916	On Leo Pargyal Range, Himalaya	Gerrard and Lloyd	1818
22,260	6784	On E. Abi Gamin, Garhiwal Himalaya	A. & R. Schlagintweit	Aug 1855
22,606	6890	Pioneer Peak on Baltoro Kangri	William M. Conway, Matthias Zurbriggen	23 Aug 1892
22,834	6960	Aconcagua, Andes	Matthias Zurbriggen	14 Jan 1897
23,394	7130	On Pyramis Peak, Karakoram	William H. Workman, J. Petigax Snr & Jnr, C. Savoie	12 Aug 1903
23,787	7250	On Gula Mandhata, Tibet	Thomas G. Longstaff, Alexis & Henri Brocherel	23 July 1905
c.23,900	c.7285	On Kabru, Sikkim-Nepal	Carl W. Rubenson and Monrad Aas	20 Oct 1907
24,607	7500	On Chogolisa, Karakoram	Duke of the Abruzzi, J. Petigax, H. & E. Brocherel	18 July 1909
c.24,900	c.7590	Camp V, Everest, Tibet-Nepal	G. L. Mallory, E. F. Norton, T. H. Somervell, H. T. Morshead	20 May 1922
26,986	8225	On Everest (North Face), Tibet	George L. Mallory, Edward F. Norton, T. Howard Somervell	21 May 1922
c.27,300	c.8320	On Everest (North Face), Tibet	George I. Finch, J. Granville Bruce	27 May 1922
28,126	8570	On Everest (North Face), Tibet	Edward Felix Norton	4 June 1924
28,126	8570	On Everest (North Face), Tibet	P. Wynn Harris, Lawrence R. Wager	30 May 1933
28,126	8570	On Everest (North Face), Tibet	Francis Sydney Smythe	1 June 1933
28,215	8599	South Shoulder on Everest, Nepal	Raymond Lambert, Tenzing Norgay	28 May 1952
28,721	8754	South Shoulder on Everest, Nepal	Thomas D. Bourdillon, Robert C. Evans	26 May 1953
29,028	8848	Everest, Nepal-Tibet	Edmund P. Hillary, Tenzing Norgay	29 May 1953

NETBALL

Origins

The game was invented in the USA in 1891 and introduced into England in 1895 by Dr Toles. The All England Women's Netball Association was formed in 1926. The oldest club in continuous existence is the Polytechnic Netball Club of London founded in 1907.

Most titles *World*

World championships were inaugurated in August 1963. Australia has won on four occasions, 1963, 1971, 1975 and 1979.

Most titles *National*

The National Championships (inst. 1966) have been won most often by Sudbury Netball Club with five titles (1968–70, 1971 (shared) and 1973).

Most titles *County*

Surrey have won the County Championships (inst 1932) a record 18 times 1949–64, 1966, 1969 (shared) and 1981.

Most international appearances

The record number of internationals is 65 by Anne Miles (b. 9 Apr 1942) of England 1965–75.

Highest scores

The World Tournament record score was in Auckland, New Zealand in 1975 when England beat Papua New Guinea 114 goals to 16. The record number of goals in the World Tournament is 402 by Judith Heath (England) (b. 1942) in 1971. The highest international score recorded was when New Zealand beat Singapore 117–9 in Oct 1974.

Marathon

Two teams of seven girls from the Condor United Sports Club played for 32 hr 23 min at Willmot, Australia on 6–8 Nov 1981.

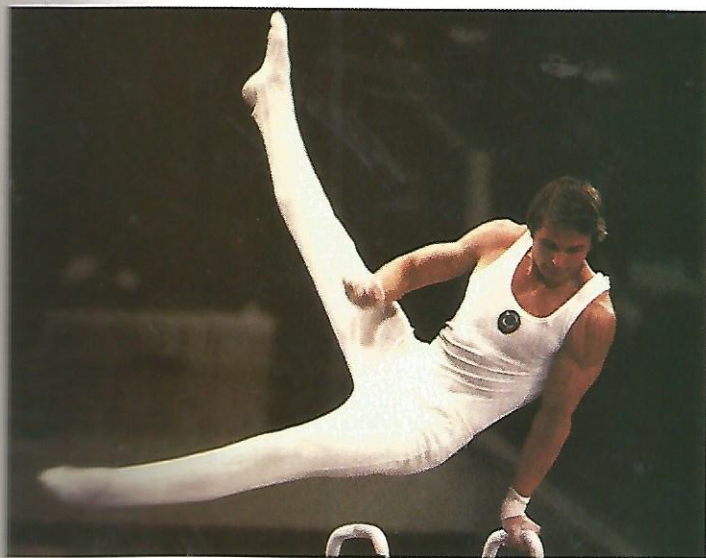
OLYMPIC GAMES

Note: These records include the un-numbered Games held at Athens in 1906.

Origins

The earliest celebration of the ancient Olympic Games of which there is a certain record is that of July 776 BC, when Coroibos, a

Aleksandr Ditiatin on the Side Horse at which he won Olympic bronze and silver medals, part of his record medal total. (Tony Duffy, All-Sport)



Netball/Olympic Games

cook from Elis, won the foot race, though their origin dates from perhaps as early as c. 1370 BC. The ancient Games were terminated by an order issued in Milan in AD 393 by Theodosius I, 'the Great' (c. 346–95), Emperor of Rome. At the instigation of Pierre de Fredi, Baron de Coubertin (1863–1937), the Olympic Games of the modern era were inaugurated in Athens on 6 Apr 1896.

Modern celebrations

Modern celebrations have been voted for by the International Olympic Committee as follows. Dates indicate the span of Olympic competitions (excluding elimination contests). The first date is not necessarily that of the opening ceremony.

I	1896	Athens, Greece	6–15 April
II	1900	Paris, France	20 May–28 Oct
III	1904	St Louis, USA	1 July–23 Nov
IV	1906	Athens, Greece	22 Apr–2 May
V	1908	London, England	27 Apr–31 Oct
VI	1912	Stockholm, Sweden	5 May–22 July
VII	1916	Berlin, Germany	not celebrated owing to war
VIII	1920	Antwerp, Belgium	20 Apr–12 Sept
IX	1924	Paris, France	4 May–27 July
X	1928	Amsterdam, Holland	17 May–12 Aug
XI	1932	Los Angeles, USA	30 July–14 Aug
XII	1936	Berlin, Germany	1–16 Aug
XIII	1940	Tokyo, then Helsinki, Finland	not celebrated owing to war
XIV	1944	London, England	not celebrated owing to war
XV	1948	London, England	29 July–14 Aug
XVI	1952	Helsinki, Finland	19 July–3 Aug
XVII	1956	Melbourne, Australia ¹	22 Nov–8 Dec
XVIII	1960	Rome, Italy	25 Aug–11 Sept
XIX	1964	Tokyo, Japan	10–24 Oct
XX	1968	Mexico City, Mexico	12–27 Oct
XXI	1972	Munich, W. Germany	26 Aug–10 Sept
XXII	1976	Montreal, Canada	17 July–1 Aug
XXIII	1980	Moscow, USSR	19 July–3 Aug
XXIV	1984	Los Angeles, USA	28 July–12 Aug
	1988	Seoul, S. Korea	20 Sept–5 Oct

^{*} This celebration (to mark the tenth anniversary of the modern Games) was officially intercalated but is not numbered.

¹ The equestrian events were held in Stockholm, Sweden, 10–17 June 1956.

Separate Winter Olympics (there had been ice skating events in 1908 and 1920 and ice hockey in 1920) were inaugurated in 1924 and have been voted for as follows:

I	1924	Chamonix, France	25 Jan–4 Feb
II	1928	St Moritz, Switzerland	11–19 Feb
III	1932	Lake Placid, New York, USA	4–15 Feb
IV	1936	Garmisch-Partenkirchen, Germany	6–16 Feb
V	1948	St. Moritz, Switzerland	30 Jan–8 Feb
VI	1952	Oslo, Norway	14–25 Feb
VII	1956	Cortina d'Ampezzo, Italy	26 Jan–5 Feb
VIII	1960	Squaw Valley, California, USA	18–28 Feb
IX	1964	Innsbruck, Austria	29 Jan–9 Feb
X	1968	Grenoble, France	6–18 Feb
XI	1972	Sapporo, Japan	3–13 Feb
XII	1976	Innsbruck, Austria	4–15 Feb
XIII	1980	Lake Placid, New York, USA	13–24 Feb
XIV	1984	Sarajevo, Yugoslavia	8–19 Feb
XV	1988	Calgary, Canada	23 Feb–6 Mar

Most medals *Individual gold*

In the ancient Olympic Games victors were given a chaplet of wild olive leaves. Leonidas of Rhodos won 12 running titles 164–152 BC. The most individual gold medals won by a male competitor in the modern Games is ten by Raymond Clarence Ewry (USA) (1874–1937) (see Track and Field Athletics). The female record is seven by Vera Caslavskaja-Odlozil (Czechoslovakia) (see Gymnastics). The most gold medals won by a British competitor is four by Paul Radmilovic (1886–1968) in water polo, 1908, 1912 and 1920 and the 4 × 200 m freestyle relay in 1908, and swimmer Henry Taylor (1885–1951) in 1906 and 1908. The Australian swimmer Iain Murray Rose, who won four gold medals, was born in Birmingham, England on 6 Jan 1939. The only Olympian to win four consecutive individual titles in the same event has been Alfred A. Oerter (b. 19 Sept 1936, Astoria, NY) of the USA, who won the discus title in 1956–68.

Swimmer Mark Andrew Spitz (USA) (b. 10 Feb 1950) won a record seven golds at one celebration, at Munich in 1972, including three in relays. The most won in individual events at one celebration is five by speed skater Eric Heiden (USA) (b. 14 June 1958) at Lake Placid, USA, in 1980.

The only man to win a gold medal in both the Summer and Winter Games is Edward F. Eagan (USA) (1898–1967) who won the 1920 Light-Heavyweight boxing title and was a member of the winning four-man bobs in 1932.

Most medals Individual

Gymnast Larissa Latynina (USSR) (b. 27 Dec 1934) won a record 18 medals (see Gymnastics). The record at one celebration is eight by gymnast Aleksandr Ditiatin (USSR) (b. 7 Aug 1957) in 1980.

Most medals National

The total figures for medals for all Olympic events (including those now discontinued) for the Summer (1896–1980) and Winter Games (1924–80):

	Gold	Silver	Bronze	Total
1. USA ¹	660 ²	511	444	1615
2. USSR (formerly Russia)	402	330	296	1028
3. GB (including Ireland to 1920) ¹	169	205	186	560

¹Excludes medals won in Official Art competitions in 1912–48.

²The AAU (US) reinstated James Francis Thorpe (1888–1953) the disqualified highest scorer in the 1912 decathlon and pentathlon events on 12 Oct 1973 but no issue of medals has yet been authorised by the IOC.

(A unique table of all medals won by nations is contained in *The Guinness Book of Answers*, 1982 edition).

Youngest and oldest gold medallists

The youngest ever winner was a French boy (whose name is not recorded) who coxed the Netherlands pair in 1900. He was 7–10 years old and he substituted for Dr Hermanus Brockmann, who coxed in the heats but proved too heavy. The youngest-ever female champion is Marjorie Gestring (USA) (b. 18 Nov 1922, now Mrs Bowman), aged 13 years 267 days, in the 1936 women's springboard event. Oscar Swahn (see p. 240) was in the winning Running Deer shooting team in 1912 aged 64 years 258 days.

Youngest and oldest Great Britain

The youngest competitor to represent Britain in the Olympic Games was Magdalena Cecilia Colledge (b. 28 Nov 1920) aged 11 years 78 days when she skated in the 1932 Games. The oldest was Hilda Lorna Johnstone (b. 4 Sept 1902) aged 70 years 5 days in the Equestrian Dressage in the 1972 Games.

Longest span

The longest span of an Olympic competitor is 40 years by Dr Ivan Osier (Denmark) (1888–1965) in fencing, 1908–32 and 1948, and Magnus Konow (Norway) (1887–1972) in yachting, 1908–20, and 1936–48. The longest feminine span is 24 years (1932–56) by the Austrian fencer Ellen Müller-Preis (b. 6 May 1912). Raimondo d'Inzeo (b. 8 Feb 1925) competed for Italy in equestrian events at a record eight celebrations from 1948 to 1976, gaining one gold, two silver and three bronze medals. Janice Lee York Romary (b. 6 Aug 1928) the US fencer, competed in all six Games from 1948 to 1968, and Lia Manoliu (Romania) (b. 25 Apr 1932) competed from 1952 to 1972 winning the discus in 1968.

The longest span of any British competitor is 28 years by Enoch Jenkins (b. 6 Nov 1892) who appeared in the 1924 and the 1952 Games in the clay pigeon shooting event, and the longest feminine span by Dorothy J. B. Tyler (*née* Odam) (b. 14 Mar 1920) who high-jumped from 1936 to 1956. The record number of appearances for Great Britain is six by fencer Bill Hoskyns from 1956 to 1976. Durward Randolph Knowles (b. 2 Nov 1917) competed in yachting for Britain in 1948 and in the following six Games for the Bahamas.

Most and least countries and participants

The greatest number of competitors and record number of countries in any summer Olympic Games has been 7147 and 122 at Munich in 1972. The fewest was 311 competitors from 13 countries in 1896. In 1904 only 12 countries participated. France entered the largest ever team of 880 men and four women in the 1900 Games at Paris.

Ever present

Four countries have never failed to be represented at the 20 celebrations of the Summer Games: Australia, Greece, Great Britain

and Switzerland. Of these only Great Britain has been present at all Winter celebrations as well.

Largest crowd

The largest crowd at any Olympic site was 150,000 at the 1952 ski-jumping at the Holmenkollen, outside Oslo, Norway. Estimates of the number of spectators of the marathon race through Tōkyō, Japan on 21 Oct 1964 were 500,000 to 1,500,000.

ORIENTEERING

Origins

Orienteering as now known was invented by Major Ernst Killander in Sweden in 1918. It was based on military exercises of the 1890s. The term was first used for an event at Oslo, Norway on 7 Oct 1900. World championships were instituted in 1966. Annual British championships were instituted in 1967 following the formation of the British Orienteering Federation.

Most titles World

Sweden has won the men's relay six times between 1966 and 1979 and the women's relay five times, 1966, 1970, 1974–6 and 1981. Ulla Lindkvist (Sweden) gained the women's individual titles in 1966 and 1968. The men's title has been won twice by Age Hadler (Norway) in 1966 and 1972, Egil Johansen (Norway) 1976 and 1978, and Ogvin Thon (Norway) in 1979 and 1981.

Most titles British

The men's relay has been won twice by Oxford University, 1975, 1979, and the women's relay three times by Derwent Valley Orienteers, 1975, 1979 and 1980. Geoffrey Peck (b. Blackpool, 27 Sept 1949) has won the men's individual title a record five times, 1971, 1973, 1976–7 and 1979. Carol McNeill (b. 20 Feb 1944) has won the women's title six times, 1967, 1969, 1972–76.

PARACHUTING

See also p. 191.

Origins

Parachuting became a regulated sport with the institution of world championships in 1951. A team title was introduced in 1954 and women's events were included in 1956.

RAF Sergeant 'Scotty' Milne from Elgin, Morayshire, has won most British parachuting titles. (Images)



SPORTS, GAMES AND PASTIMES

Most titles World

The USSR won the men's team titles in 1954, 1958, 1960, 1966, 1972, 1976, and 1980, and the women's team title in 1956, 1958, 1966, 1968, 1972, and 1976. Nikolai Ushamyev (USSR) has won the individual title twice, 1974 and 1980.

Most titles British

Sgt Ronald Alan 'Scotty' Milne (b. 5 Mar 1952) of the Parachute Regiment has won the British title five times in 1976-7, 1979-81.

Greatest accuracy

Jacqueline Smith (GB) (b. 29 Mar 1951) scored ten consecutive dead centre strikes (10 cm 4 in disc) in the World Championships at Zagreb, Yugoslavia, 1 Sept 1978. At Yuma, Arizona, USA, in March 1978, Dwight Reynolds scored a record 105 daytime dead centres, and Bill Wenger and Phil Munden tied with 43 nighttime DCs, competing as members of the US Army team, the Golden Knights. With electronic measuring the official FAI record is 50 DCs by Alexander Aasmiae (USSR) at Ferghana, USSR, Oct 1979.

PELOTA VASCA (Jai Alai)

Origins

The game, which originated in Italy as *longue paume* and was introduced into France in the 13th century, is said to be the fastest of all ball games. The glove or *gant* was introduced c. 1840 and the *chistera* was invented by Jean 'Gantchiki' Dithurbide of Ste Pée, France. The *grand chistera* was invented by Melchior Curuchague of Buenos Aires, Argentina in 1888.

The world's largest *frontón* (enclosed stadium) is the World Jai-Alai at Miami, Florida, USA, which had a record attendance of 15,052 on 27 Dec 1975.

World Championships

The Federation Internacional de Pelota Vasca stage world championships every four years (first in 1952). The most successful pair have been Roberto Elias and Juan Labat (Argentina), who won the *Trinquete Share* four times, 1952, 1958, 1962 and 1966. Labat won a record seven world titles in all. The most wins in the long court game *Cesta Punta* is three by Hamuy of Mexico, with two different partners, 1958, 1962 and 1966.

Highest speed

An electronically measured ball velocity of 188 mph 302 km/h was recorded by José Ramon Areitio at the Newport Jai Alai, Rhode Island, USA on 3 Aug 1979.

Longest domination

The longest domination as the world's No. 1 player was enjoyed by Chiquito de Cambo (*né* Joseph Apesteguy) (France), (1881-1955) from the beginning of the century until succeeded in 1938 by Jean Urruty (France) (b. 19 Oct 1913).

PIGEON RACING

Earliest references

Pigeon racing developed from the use of homing pigeons for carrying messages—a quality utilised in the ancient Olympic Games (776 BC-AD 393). The sport originated in Belgium from commercial services and the earliest long-distance race was from London to Antwerp in 1819, involving 36 pigeons. The earliest recorded occasion on which 500 miles 804 km was flown in a day was by *Motor* (owned by G. P. Pointer of Alexander Palace Racing Pigeon Club) which was released from Thurso, Scotland on 30 June 1896 and covered 501 miles 806 km at an average speed of 1454 yd 1329 m per min (49½ mph 79.6 km/h).

Longest flights

The greatest recorded homing flight by a pigeon was made by one owned by the 1st Duke of Wellington (1769-1852). Released from a sailing ship off the Ichabo Islands, West Africa, on 8 April, it dropped dead a mile from its loft at Nine Elms, Wandsworth, London on 1 June 1845, 55 days later, having flown an airline route of 5400 miles 8700 km, but an actual

Parachuting/Pelota Vasca/Pigeon Racing/Polo

distance of possibly 7000 miles 11250 km to avoid the Sahara Desert. The official British duration record (into Great Britain) is 1173 miles 1887 km in 15 days by C.S.O. (owned by Rosie and Bruce of Wick) in the 1976 Palamos Race. In the 1975 Palamos Race, *The Conqueror*, owned by Alan Raeside, homed to Irvine, Strathclyde, 1010 miles 1625 km, in 43 hr 56 min. The greatest number of flights over 1000 miles flown by one pigeon is that of *Dunning Independence* owned by D. Smith which annually flew from Palamos to Dunning, Perthshire, Scotland 1039 miles 1662 km between 1978 and 1981.

Greatest competitive mileage

A red chequer cock *Concord* owned by Gerry Holten, of Taupiri, NZ has flown a record competitive 15,033 miles 24 193 km.

Highest speeds

In level flight in windless conditions it is very doubtful if any pigeon can exceed 60 mph 96 km/h. The highest race speed recorded is one of 3229 yd 2952 m per min (110.07 mph 177.14 km/h) in the East Anglian Federation race from East Croydon on 8 May 1965 when the 1428 birds were backed by a powerful south south-west wind. The winner was owned by A. Vidgeon & Son, Wickford, Essex.

The highest race speed recorded over a distance of more than 1000 km 621.37 miles is 2432.7 yd 2224.5 m per min (82.93 mph 133.46 km/h) by a hen in the Central Cumberland Combine race over 683 miles 147 yd 1099,316 km from Murray Bridge, South Australia to North Ryde, Sydney on 2 Oct 1971.

24 hr records

The world's longest reputed distance in 24 hr is 803 miles 1292 km (velocity 1525 yd 1394 m per min) by E. S. Petersen's winner of the 1941 San Antonio R.C. event in Texas, USA.

The best 24-hr performance into the United Kingdom is 724 miles 219 yd 1165,3 km by E. Cardno's *Mormond Lad*, on 2 July 1977, from Nantes, France to Fraserburgh, Grampian. Average speed was 1648 yd 1507 m per min (56.18 mph 90.41 km/h).

Lowest speed

A pigeon *Blue Clip*, belonging to Harold Hart released in Rennes, France arrived home in its loft in Leigh, Greater Manchester, on 29 Sept 1974, 7 years and 2 months later. It had covered the distance of 370 miles 595 km at an average speed of 0.00589 mph 0.00948 km/h which is slower than the world's fastest snail (see page 49).

Most first prizes

Owned by R. Green, of Walsall Wood, West Midlands, *Champion Breakaway* won 59 first prizes from 1972 to May 1979.

Highest priced bird

The highest recorded price paid for a pigeon is approximately £25,000 by a Japanese fancier for *De Wittslager* to Georges Desender (Belgium) in October 1978.

POLO

Earliest games

Polo is usually regarded as being of Persian origin having been played as *Pulu* c. 525 BC. Other claims have come from Tibet and the Tang Dynasty of China AD 250. The earliest polo club of modern times was the Kachar Club (founded in 1859) in Assam, India. The game was introduced into England from India in 1869 by the 10th Hussars at Aldershot, Hampshire and the earliest match was one between the 9th Lancers and the 10th Hussars on Hounslow Heath, Greater London, in July 1871. The earliest international match between England and the USA was in 1886.

Most Olympic medals

Polo has been part of the Olympic programme on five occasions: 1900, 1908, 1920, 1924, and 1936. Of the 21 gold medallists, a 1920 winner, the Rt Hon. Sir John Wodehouse, Br., CBE, MC, the 3rd Earl of Kimberley (b. 1883-k. 1941) uniquely also won a silver medal (1908).



Most international appearances

The most times any player has represented England is four in the case of (later Sir) Frederick Maitland Freake (1876–1950) in 1900, 1902, 1909 and 1913. Thomas Hitchcock, Jr. (1900–44) played five times for the USA v. England (1921, 1924, 1927, 1930, 1939) and twice v. Argentina (1928 and 1936).

Highest handicap

The highest handicap based on eight 7½-min 'chukkas' is ten goals introduced in the USA in 1891 and in the United Kingdom and in Argentina in 1910. The latest of the 39 players ever to receive ten-goal handicaps are Alberto Heguy and Alfredo Harriott of Argentina, and in England, Eduardo Moore (Argentina). The last (of six) ten-goal handicap players from Great Britain was Gerald Balding in 1939. A match of two 40-goal teams was staged for the first time ever, at Palermo, Buenos Aires, Argentina, in 1975.

The highest handicap of the United Kingdom's current 500 players is nine by Julian Hipwood (b. 23 June 1946). Claire J. Tomlinson of Gloucestershire has a handicap of four, the highest ever attained by a British woman.

Highest score

The highest aggregate number of goals scored in an international match is 30, when Argentina beat the USA 21–9 at Meadow Brook, Long Island, New York, USA, in September 1936.

Largest crowd

World record crowds of more than 50,000 have watched floodlit matches at the Sydney Agricultural Show, Australia. A crowd of 40,000 watched a game played at Jaipur, India, in 1976 using elephants instead of ponies. The length of the polo sticks used has not been ascertained.

POWERBOAT RACING

See also The Guinness Book of Motorboating Facts and Feats by Kevin Desmond, published by Guinness Superlatives Ltd (price £7.95).

Origins

The earliest application of the petrol engine to a boat was by Jean Joseph Etienne Lenoir (1822–1900) on the River Seine, Paris, France, in 1865. The sport was given impetus by the presentation of an international championship cup by Sir Alfred Harmsworth in 1903, which was also the year of the first off-shore race from Calais to Dover.

Harmsworth Trophy

Of the 25 International contests from 1903 to 1961, the United

Tony Williams in his formula one OZ powerboat in which he set a world record speed on Lake Windermere in 1981. (Sporting Pictures (UK) Ltd)

States won the most with 16. The greatest number of wins was eight, by Commodore Garfield A. Wood (1881–1971) 1920–1, 1926, 1928–30, 1932–3. The only boat to win three times is *Miss Supertest III*, owned by James G. Thompson (Canada), driven by the late Bob Hayward (Canada), in 1959–61. This boat also achieved the record speed of 119.27 mph 191.94 km/h at Picton, Ontario, Canada in 1961. In 1980 competition for the Trophy was revived as an invitation match race awarded on points scored in certain specified offshore races. The winner in 1980 was Bill Elsworth (USA) and in 1981 Paul Clauser (USA).

Gold Cup

The Gold Cup (instituted 1903) has been won eight times by Bill Muncey (1929–81) (USA), 1956–7, 1961–2, 1972, 1977–9. The record speed is 128.338 mph 206.539 km/h for a 2½ mile 4 km lap by the unlimited hydroplane *Atlas Van Lines*, driven by Bill Muncey in a qualifying round on the Columbia River, Washington, USA, in July 1977, and again in July 1978.

Cowes International Offshore Powerboat Classic

The record average for this International Off-shore Race (instituted 1961) is 79.64 mph 128.16 km/h by *Satisfaction* driven by Bill Elswick (USA) over the 213.75 nautical mile (246.13 miles 396.12 km) course in 3 hr 4 min 35 sec on 23 Aug 1980. The only three time winner has been Thomas Edward Brodie 'Tommy' Sopwith (b. 15 Nov 1932) (GB) in 1961, 1968 and 1970.

Highest speeds

The fastest off-shore record, as recognised by the Union Internationale Motonautique, is 97.39 mph 156.70 km/h by Ted Toleman's Class I Cougar *Slick 50* on the Solent on 25 Sept 1981. The recognised speed record for Class OZ, a circuit boat, is 137.96 mph 222.02 km/h by Tony Williams on Lake Windermere on 14 Oct 1981. The fastest UIM inboard engine category for circuit racing is R4 at 131.12 mph 211.02 km/h by F. Forstei (Italy). (For the world water speed record see p. 175).

Longest races

The longest race has been the Port Richborough London to Monte Carlo Marathon Off-Shore International event. The race extended over 2947 miles 4742 km in 14 stages on 10–25 June 1972. It was won by *H.T.S.* (GB) driven by Mike Bellamy, Eddie Chater and Jim Brooks in 71 hr 35 min 56 sec (average 41.15 mph 66.24 km/h). The *Daily Telegraph* and BP Round Britain race, 26 July–7 Aug 1969, 1403 miles 2257 km (from Portsmouth in ten stages west and via the Caledonian Canal) was

SPORTS, GAMES AND PASTIMES

won by *Avenger Too* (Timo Makinen, Alan Pascoe Watson and Brian Hendicott) in 39 hr 9 min 37.7 sec. Of 42 starters, 24 finished.

Longest Jetboat Jumps

The longest ramp jump achieved by a jetboat has been 120 ft 36.57 m by Peter Horak (USA) in a Glastron Carlson CVX 20 Jet Deluxe with a 460 Ford V8 engine (take-off speed 55 mph 88 km/h) for a documentary TV film, at Salton Sea, California, USA on 26 Apr 1980. The longest leap on to land is 172 ft 38.7 m by Norm Bagvie (NZ) from the Shotover River on 1 July 1982 in the 1½ ton jetboat *Valdene*.

Dragsters

Eddie Hill (USA) recorded 220.76 mph 355.2 km/h in his blown fuel hydro drag boat *The Texan*, as recognised by the Southern Drag Boat Association, at San Antonio, Texas, USA on 29 Aug 1981.

RACKETS

Origins

There is record of the sale of a racket court at Southernhay, Exeter, Devon dated 12 Jan 1798. The game which is of 17th century origin was played by debtors in the Fleet Prison, London in the middle of the 18th century, and an inmate, Robert Mackay, claimed the first 'world' title in 1820. The first closed court champion was Francis Erwood at Woolwich in 1860. A new court was constructed at the Sea Court Club, Hayling Island, Hampshire in 1979.

Longest reign

Of the 20 world champions since 1820 the longest reign is by Geoffrey Willoughby Thomas Atkins (b. 20 Jan 1927) who held the title after beating the professional James Dear MBE (1910–81) in 1954 and retired, after defending it four times, in April 1972.

Most Amateur titles

Since the Amateur singles championship was instituted in 1888 the most titles won by an individual is nine by Edgar Maximilian Baerlein (1879–1971) between 1903 and 1923. Since the institution of the Amateur doubles championship in 1890 the most shares in titles has been eleven by David Sumner Milford (b. 7 June 1905), between 1938 and 1959 and John Ross Thompson (b. 10 May 1918) between 1948 and 1966. Milford has also seven Amateur singles titles (1930–51), an Open title (1936) and held the World title from 1937 to 1946. Thompson has additionally won an Open singles title and five Amateur singles titles.

RODEO

Origins

Rodeo which developed from 18th century *fiestas* came into being in the early days of the North American cattle industry. The sport originated in Mexico and spread from there into the cattle regions of the USA. Steer wrestling came in with Bill Pickett (1870–1932) of Texas, in 1900.

Larry Mahan, six times world all-round rodeo champion, on *Moon Rocket* at the famous Calgary Exhibition and Stampede.



Powerboating/Rackets/Rodeo/Roller Skating

The largest rodeo in the world is the Calgary Exhibition and Stampede at Calgary, Alberta, Canada. The record attendance has been 1,069,830 on 8–17 July 1977. The record for one day is 148,486 on 7 July 1979. The oldest continuously held rodeo is that at Payson, Arizona, first held in August 1887.

Most world titles

The record number of all-round titles in the Association of Professional Rodeo Cowboys world championships is six by Larry Mahan (USA) (b. 21 Nov 1943) in 1966–70 and 1973 and, alternatively, 1974–9 by Tom Ferguson (b. 20 Dec 1950). Shoulders (b. 1928) of Henryetta, Oklahoma, USA has won record 16 world championships between 1949 and 1958. The record figure for prize money in a single season is \$105,000 by Jimmie Cooper (USA) in 1981.

Youngest champion

The youngest winner of a world title is Metha Brorsen, of Oklahoma, USA, who was only 11 years when she won the International Rodeo Association Cowgirls barrel racing event in 1975.

Time records

Records for timed events, such as calf-roping and steer wrestling, are not always comparable, because of the varying conditions due to the size of arenas and amount of stock given the stock. The fastest time recorded for roping a steer is 5.7 sec by Lee Phillips at Assiniboia, Saskatchewan, Canada, in 1978, and the fastest time for overcoming a steer is 2.4 sec by James Bynum, at Marietta, Oklahoma, USA, in 1955. The fastest time for a steer is 2.4 sec by James Bynum, at Marietta, Oklahoma, USA, in 1955. The fastest time for a steer is 2.4 sec by James Bynum, at Marietta, Oklahoma, USA, in 1955. The fastest time for a steer is 2.4 sec by James Bynum, at Marietta, Oklahoma, USA, in 1955.

The standard required time to stay on in bareback, saddlebronc and bull riding events is 8 sec. In the now discontinued a-finish events, rodeo riders have been recorded to have survived 90 + min, until the mount had not a buck left in it.

The highest score in bull riding was 98 points by Dennis Miller on *Red Lightning* at Palestine, Illinois, USA in 1979.

Champion bull

The top bucking bull was probably *Honky Tonk*, an 11-year-old Brahma, who unseated 187 riders in an undefeated career to his retirement in September 1978.

Champion bronc

Traditionally a bronc called *Midnight* owned by Jim Mahan, Alberta, Canada was never ridden in 12 appearances at the Calgary Stampede.

ROLLER SKATING

Origins

The first roller skate was devised by Jean Joseph Merlin (1803) of Huy, Belgium, in 1760 and first worn by him in London. James L. Plimpton of New York produced the first four-wheeled type and patented it in January 1863. The first indoor rink was opened in the Haymarket, London, in 1824. The great boom periods were 1870–5, 1908–17 and 1954, each originating in the United States.

Most titles Speed

Most world speed titles have been won by Alberto Tomba (Italy) with 16 between 1953 and 1965. Most British individual men's titles have been won by Michael McGowan with 14 in 1966–82. Chloe Ronaldson (b. 30 Nov 1939) has won 14 individual and 12 team ladies' titles from 1958 to 1982.

Most titles Figure

The records for figure titles are five by Karl Heine (Germany) in 1958–9, 1961–2 and 1966, and four by Astrid Bader (Germany), in 1965–8. Most world pair titles have been won by Dieter Fingerle (W. Germany) with four in 1959, 1960, 1961 and 1962.

Speed skating

The fastest speed put up in an official world record is 22.2 sec by...

41.48 km/h when Giuseppe Cantarella (Italy) (b. 13 Aug 1944) recorded 34.9 sec for 440 yd 402 m on a road at Catania, Sicily on 28 Sept 1963. The world mile record on a rink is 2 min 25.1 sec by Gianni Ferretti (Italy) (b. 11 May 1948) at Inzell, W. Germany on 28 Sept 1968. The greatest distance skated in 1 hr on a rink by a woman is 35,399 km 21.995 miles by Marisa Anna Danesi (Italy) (b. 25 Nov 1935) at Inzell, W. Germany on 28 Sept 1968. The men's record on a track is 37,230 km 23,133 miles by Alberto Civolani (Italy) (b. 16 Mar 1933) at Inzell, W. Germany on 28 Sept 1968. He went on to skate 50 miles 80.46 km in 2 hr 20 min 33.1 sec.

Largest rink

The greatest indoor rink ever to operate was located in the Grand Hall, Olympia, London. Opened 1890 and closed in 1912 it had an actual skating area of 68,000 ft² 6300 m². The current largest is the Fireside Roll-Arena, Illinois, USA which has a total skating surface of 29,859 ft² 2774 m².

Endurance

Theodore James Coombs (b. 1954) of Hermosa Beach, California, skated 5193 miles 8357 km from Los Angeles to New York and back to Yates Center, Kansas from 30 May to 14 Sept 1979.

Marathon

The longest recorded continuous roller skating marathon was one of 337 hr 20 min by Robert Zorn, Ken Morris and Cary Cube at Roller World, Santee, California, USA on 19 Aug-2 Sept 1981.

ROLLER HOCKEY

Roller hockey (previously known as Rink Hockey in Europe) was first introduced in this country as Rink Polo, at the old Lava rink, Denmark Hill, London in the late 1870s. The Amateur Rink Hockey Association was formed in 1908, and in 1913 became the National Rink Hockey (now Roller Hockey) Association. Britain won the inaugural World Championship in 1936 since when Portugal has won most titles with 12 between 1947 and 1982. The European Championship (inst. 1926) was won by Portugal a record 15 times between 1947 and 1977.



Boris Rankov and Sue Brown after their 1982 Boat Race success. Rankov, five times in the winning boat, also rowed twice for Oxford's second boat, Isis, in 1974-5, with one win against Cambridge's Goldie. (Sporting Pictures (UK) Ltd)

1977) in the sculls (1924), coxless fours (1932) and double sculls (1936), Vyacheslav Ivanov (USSR) (b. 30 July 1938) in the sculls (1956, 1960 and 1964) and Siegfried Brietzke (E. Germany) (b. 12 June 1952) in the coxless pairs (1972) and coxless fours (1976, 1980).

ROWING

Oldest race

The Sphinx stela of Amenhotep II (1450-1425 BC) records that he stroked a boat for some three miles. The earliest established sculling race is the Doggett's Coat and Badge, which was first rowed on 1 Aug 1716 from London Bridge to Chelsea and is still contested annually. Although rowing regattas were held in Venice in 1300 the first English regatta probably took place on the Thames by the Ranelagh Gardens, near Putney in 1775. Boating began at Eton in 1793, 72 years before the 'song'. The Leander Club was formed c. 1818.

Most Olympic medals

Five oarsmen have won three gold medals: John B. Kelly (USA) (1889-1960), father of HSH Princess Grace of Monaco, in the sculls (1920) and double sculls (1920 and 1924); his cousin Paul Vincent Costello (USA) (b. 27 Dec 1899) in the double sculls (1920, 1924 and 1928); Jack Beresford, Jr, CBE (GB) (1899-

Boat Race

The earliest University Boat Race, which Oxford won, was from Hambledon Lock to Henley Bridge on 10 June 1829. Outrigged eights were first used in 1846. In the 128 races to 1982, Cambridge won 68 times, Oxford 59 times and there was a dead heat on 24 Mar 1877.

The race record time for the course of 4 miles 374 yd 6779 km (Putney to Mortlake) is 16 min 58 sec by Oxford on 20 Mar 1976. This represents an average speed of 14.89 mph 23.97 km/h. The smallest winning margin has been by a canvas by Oxford in 1952 and 1980. The greatest margin (apart from sinking) was Cambridge's win by 20 lengths in 1900.

The record to the Mile Post is 3 min 31 sec (Oxford 1978) an average speed of 17.06 mph 27.45 km/h; Hammersmith Bridge 6 min 24 sec (Oxford 1978); Chiswick Steps 10 min 18 sec (Oxford 1976); and Barnes Bridge 14 min 09 sec (Oxford 1976).

Boris Rankov (Oxford, 1978-82) is the only man to have rowed

MEN—Fastest times over 2000 m course (still water)

	min sec	Country
Single Sculls	6:49.68	Nikolai Dovgan, USSR
Double Sculls	6:12.48	Norway
Coxed Pairs	6:56.94	East Germany
Coxless Pairs	6:33.02	East Germany
Coxed Fours	6:09.17	East Germany
Coxless Fours	5:53.65	East Germany
Quadruple Sculls	5:47.38	West Germany
Eights	5:32.17	East Germany

Place	Date	
Amsterdam, Netherlands	26 Aug	1978
Montreal, Canada	23 July	1976
Copenhagen, Denmark	—Aug	1971
Montreal, Canada	23 July	1976
Amsterdam, Netherlands	30 June	1979
Montreal, Canada	23 July	1976
Lucerne, Switzerland	4 June	1980
Montreal, Canada	18 July	1976

WOMEN—Fastest times over 1000 m course (still water)

	min sec	Country
Single Sculls	3:34.31	Christine Scheiblich, East Germany
Double Sculls	3:16.27	USSR
Coxless Pairs	3:26.32	East Germany
Coxed Fours	3:14.03	East Germany
Quadruple Sculls	3:08.49	East Germany
Eights	2:57.38	East Germany

Place	Date	
Amsterdam, Netherlands	21 Aug	1977
Moscow, USSR	26 July	1980
Amsterdam, Netherlands	21 Aug	1977
Lucerne, Switzerland	15 June	1980
Montreal, Canada	19 July	1976
Lucerne, Switzerland	15 June	1980

in five winning boats. C. R. W. Tottenham (Oxford 1864–8) coxed five winning boats. Susan Brown, the first woman to take part, coxed the winning Oxford boats in 1981 and 1982.

The heaviest man ever to row in a University boat has been Stephen G. H. Plunkett (Queen's) the No. 5 in the 1976 Oxford boat at 16 st 5 lb 104 kg. The 1976 Oxford crew averaged a record 14 st 0½ lb 89 kg. The lightest oarsman was the 1882 Oxford Stroke, Alfred Herbert Higgins, at 9 st 6½ lb 60 kg. The lightest coxes, Francis Henry Archer (Cambridge) (1843–89) in 1862 and Hart Parker Vincent Massey (Oxford) (b. Canada, 30 Mar 1918) in 1939, were both 5 st 2 lb 32.6 kg.

Head of the River

A processional race for eights instituted in 1926, the Head has an entry limit of 420 crews (3780 competitors). The record for the course Mortlake–Putney (the reverse of the Boat Race) is 17 min 10.42 sec by the ARA National Squad in 1982.

Henley Royal Regatta

The annual regatta at Henley-on-Thames, Oxfordshire, was inaugurated on 26 Mar 1839. Since then the course, except in 1923, has been about 1 mile 550 yd 2112 m varying slightly according to the length of boat. In 1967 the shorter craft were 'drawn up' so all bows start level.

The most wins in the Diamond Challenge Sculls (inst. 1844) is six consecutively by Stuart A. Mackenzie (b. 5 Apr 1937) (Australia and GB) 1957–62. The record time is 7 min 40 sec by Sean Drea (Neptune RC, Ireland) on 5 July 1975. The Grand Challenge Cup (inst. 1839) for eights, has been won 27 times by Leander C crews between 1840 and 1953. The record time for the event is 6 min 13 sec by Harvard Univ, USA, and a combined Leander/Thames Tradesmen crew, both on 5 July 1975.

Sculling

The record number of wins in the Wingfield Sculls (Putney to Mortlake) (instituted 1830) is seven by Jack Beresford, Jr. from 1920 to 1926. The fastest time has been 21 min 11 sec by Leslie Frank Southwood (b. 18 Jan 1906) on 12 Aug 1933. The most world professional sculling titles (instituted 1831) won is seven by William Beach (Australia) (1850–1935) between 1884 and 1887.

Highest speed

The highest recorded speed on non-tidal water for 2000 m 2187 yd is by an East German eight in 5 min 32.17 sec (13.46 mph 21.67 km/h) at Montreal, Canada on 18 July 1976. A team from Penn AC, USA, was timed in 5 min 18.8 sec (14.03 mph 22.58 km/h) in the FISA Championships on the River Meuse, Liege, Belgium, on 17 Aug 1930.

Cross Channel

The Rev Sidney Swann (1862–1942) sculled across the Channel in a record 3 hr 50 min on 12 Sept 1911. For trans-Atlantic rowing records see p. 178.

River Thames

A crew of five from 'F' Division of the London Fire Brigade rowed the navigable length of the Thames, 209 miles 336 km, from Lechlade Bridge, Gloucestershire to Southend Pier, Essex in 53 hr 2 min on 2–4 July 1981. The fastest time from Folly Bridge, Oxford to Westminster Bridge, London (112 miles 180 km) is 14 hr 35 min 46 sec by an eight from Guy's Hospital on 28 Apr 1974.

Loch Ness

Loch Ness, (22.7 miles 36.5 km), was rowed by George G. Parsonage, 31, of Whitehill Secondary School, Glasgow in 2 hr 43 min 34.1 sec on 17 May 1975. A coxed junior eight (average age 15 yr 7 months) from Sir Thomas Rich's School, Gloucester, took 2 hr 35 min 38.2 sec on 25 Aug 1975.

Longest race

The longest annual rowing race is the annual Tour du Lac Lemman, Geneva, Switzerland for coxed fours (the five man team taking turns as cox) over 160 km 99 miles. The record winning time is 13 hr 26 min 30 sec by Utrechtse Roeivereniging Viking, Netherlands on 12–13 Sept 1981.

Punting

The earliest reference to punting as a sport was in 1793. Amateur and professional championships were instituted in the 1870s. Victorians argued about the two styles of pole planting and punting versus pricking. Abel Beasley, the foremost exponent of the latter, won the Professional Championship 14 times (1877–90). In winning the 1896 Amateur title B. Rixon achieved a mean average speed of 7.6 mph 12.2 km/h. The longest recorded race is one of 721 miles 1160 km, Oxford–Leeds–Oxford by John Pearse, aided mainly by John Charles and three other amateur crew members from Jesus College, Oxford, on 19 June–19 Aug 1965. A trip of 694 miles 1116 km was made by Michael Wainwright and Christopher Smith, of Magdalen College, Oxford on 19 June–3 Aug 1980.

SHINTY

Origins

Shinty (from the Gaelic *sinteag*, a bound) has roots reaching more than 2000 years to the ancient game of *camanachd*, a sport of the curved stick, the diversion of the heroes of Gaelic history and legend. It was effective battle training, combining speed and co-ordination of eye and arm along with aggression and cool self-control. In spite of the break up of the clan system in the Highlands of Scotland, the "ball plays", involving whole parishes, without limit in number or time except the hours of the night, continued in areas such as Lochaber, Badenoch and Strathglass. Whisky and the inspiration of the bagpipes were important ingredients of these occasions. The ruling body of the apparently ungovernable game was established in 1893 when the Camanachd Association was set up at Kingussie, Highland. Composite rules, produced with the cousin sport of hurling in Ireland, have provided a series of international matches.

Most titles

Newtonmore, Highland has won the Camanachd Association Challenge Cup (instituted 1896) a record 26 times (1896–1996).

George MacPherson of Kingussie and Kerr Crawford of Fort William wield their camans at the 1974 Camanachd Cup Final at Kingussie (Donald Mackay)



Johnnie Campbell of Newtonmore won a record 11 winners' medals. In 1923 the Furnace Club, Argyll won the Cup without conceding a goal throughout the competition.

Highest scores

The highest Scottish Cup Final score was in 1909 when Newtonmore beat Furnace 11-3 at Glasgow, Dr Johnnie Cattanach scoring eight goals. In 1938 John Macmillan Mactaggart scored ten goals for Mid-Argyll in a Camanachd Cup match.

SHOOTING

Earliest club

The Lucerne Shooting Guild (Switzerland) was formed c. 1466 and the first recorded shooting match was at Zurich in 1472.

Most Olympic medals

The record number of medals won is 11 by Carl Townsend Osburn (USA) (1884-1966) in 1912, 1920 and 1924, consisting of five gold, four silver and two bronze. Six other marksmen have won five gold medals. The only marksman to win three individual gold medals has been Gudbrand Skatteboe (Norway) (1875-1965) in 1906.

INDIVIDUAL WORLD RECORDS

(as ratified by the International Shooting Union (IUI)).

Event		Possible—Score
Free Rifle		
Lones W. Wigger (USA)	300 m	3 × 40 shots
Lones W. Wigger (USA)		1200—1160
Gennadi Lushikov (USSR)		Oct 1978
Aleksandr Mastrianin (USSR)		Nov 1981
Lones W. Wigger (USA)		Nov 1981
Philip Whitworth (USA)		Nov 1981
Standard Rifle		
Lones W. Wigger (USA)	300 m	3 × 20 shots
		600—580
Small-bore Rifle		
Viktor Vlasov (USSR)	50 m	3 × 40 shots
		1200—1173
Alistair Allan (GB)		23 July 1980
E. Van de Zande (USA)		Nov 1981
Free Pistol		
Aleksandr Melentev (USSR)	50 m	60 shots prone
		600—600
Rapid Fire Pistol		
Igor Puzyrev (USSR)	25 m	60 shots
		600—599
Centre Fire Pistol		
Thomas D. Smith (USA)	25 m	60 shots
		600—597
Standard Pistol		
Ragnar Skanaker (Sweden)	25 m	60 shots
		600—583
Running Target		
Igor Sokolov (USSR)	50 m	60 shots 'normal runs'
		600—595
Trap		
Angelo Scalzone (Italy)	—	200 birds
Michel Carrega (France)		200—199
Skeet		
Matthew Dryke (USA)	—	200 birds
		200—200
Air Rifle		
Harald Stenvaag (Norway)	10 m	60 shots
		600—590
Air Pistol		
Vladimir Touria (USSR)	10 m	60 shots
		600—587

Bisley

The National Rifle Association was instituted in 1859. The Queen's (King's) Prize has been shot since 1860 and has only once been won by a woman—Marjorie Elaine Foster, MBE (1894-1974) (score 280) on 19 July 1930. Arthur George Fulton, MBE (1887-1972) won a record three times (1912, 1926, 1931). Both his father and his son also won the Prize.

The highest score (possible 300) for the final of the Queen's Prize is 295 by Lindsey Peden (Scotland) on 24 July 1982. The record for the Silver Medal is 150 (possible 150) by Martin John Brister (City Rifle Club) (b. 1951) and the Lord Swansea on 24 July 1971. This was equalled by John Henry Carmichael (WRA Bromsgrove RC) on 28 July 1979 and Robert Stafford on 26 July 1980, with the size of the bullseyes reduced.

Small-Bore

The National Small-Bore Rifle Association, of Britain, was formed in 1901. The British team record (1966 target) is 1988 × 2000 by Lancashire in 1968-9 and London in 1980-1. The British individual small-bore rifle record for 60 shots prone is 600 × 600, first achieved by John Palin (b. 16 July 1934) in Switzerland in 1972. Richard Hansen shot 5000 bullseyes in 24 hr at Fresno, Cal, USA on 13 June 1929.

Clay pigeon

Most world titles have been won by Susan Natrass (Canada) (b. 5 Nov 1950) with six in 1974-5, 1977-9, 1981. The record number of clay birds shot in an hour is 1905 by Terry Reginald Harper (b. 10 Jan 1943) at Beverley, East Yorkshire, on a Skeet range, on 19 May 1982. Graham Douglas Geater (b. 21 July 1947) shot 2264 targets in an hour on a Trapshooting range at the NILO Gun Club, Papamoa, New Zealand on 17 Jan 1981.

Bench rest shooting

The smallest group on record at 1000 yd 914 m is 5.093 in 12,936 cm by Rick Taylor with a 300 Weatherby at William-sport, Penn., USA on 24 Aug 1980.

Highest score in 24 hr

The Central Lancashire Rifle Club team of John Jepson, Graham Sharples, Derek Byron and Joseph Graham, scored 85,752 points (averaging 94.03 per card) on 26-27 Nov 1976.

Trick shooting

The greatest revolver firing feat was that of Ed McGivern (USA), who twice fired from 15 ft 4.5 m five shots which could be covered by a silver half-dollar piece (diameter 1.205 in 3,060 cm) in 0.45 sec at the Lead Club Range, South Dakota, USA, on 20 Aug 1932. On 13 Sept 1932 at Lewiston, Montana, McGivern fired ten shots in 1.2 sec from two guns at the same time double action (no draw) all ten shots hitting two 2¼ × 3½ in 5,7 × 8,9 cm playing cards at 15 ft 4.5 m.

The most renowned trick shot of all-time was Phoebe Anne Oakley Mozee (Annie Oakley) (1860-1926). She demonstrated the ability to shoot 100 × 100 in trap shooting for 35 years aged between 27 and 62. At 30 paces she could split a playing card end-on, hit a dime in mid-air or shoot a cigarette from the lips of her husband—one Frank Butler.

SKIING

Origins

The most ancient ski in existence was found well preserved in a peat bog at Hoting, Sweden, dating from c. 2500 BC. The earliest recorded military use of skiing was at the Battle of Isen, near Oslo, Norway in 1200. The Trysil Shooting and Skiing Club, founded in Norway in 1861, claims it is the world's oldest. The oldest ski competitions are the Holmenkollen Nordic events which were first held in 1866. The first downhill races were staged in Australia in the 1850s. The first Slalom event was run at Murren, Switzerland, on 21 Jan 1922. The International Ski Federation (FIS) was founded on 2 Feb 1924. The Winter Olympics were inaugurated on 25 Jan 1924. The FIS recognises both the Winter Olympics and the separate World Ski Championships as world championships. The Ski Club of Great Britain was founded on 6 May 1903. The National Ski Federation of Great Britain was formed in 1964 and changed its name to the British Ski Federation in 1981.

Most titles World Championships—Alpine

The world Alpine championships were inaugurated at Murren, Switzerland, in 1931. The greatest number of titles won has been by Christel Cranz (b. 1 July 1914) of Germany, with seven individual—four Slalom (1934, 1937-9) and three Downhill (1935, 1937, 1939), and five Combined (1934-5, 1937-9). She also won the gold medal for the Combined in the 1936 Olympics. The most won by a man is seven by Anton 'Toni' Sailer (b. 17 Nov 1935) (Austria) who won all four in 1956 (Giant Slalom, Slalom, Downhill and the non-Olympic Alpine Combination) and the Downhill, Giant Slalom and Combined in 1958.

Most titles World Championships—Nordic

The first world Nordic championships were those of the 1924 Winter Olympics in Chamonix, France. The greatest number of titles won is nine by Galina Koulakova (b. 29 Apr 1942) (USSR) in 1968–78. She also won four silver and four bronze medals for a record 17 in total. The most won by a man is eight, including relays, by Sixten Jernberg (b. 6 Feb 1929) (Sweden) in 1956–64. Johan Grøttumsbraaten (1899–1942) of Norway won six individual titles in 1926–32. The record for a jumper is five by Birger Ruud (b. 23 Aug 1911) of Norway, in 1931–2 and 1935–7. Ruud is the only person to win Olympic titles in each of the dissimilar Alpine and Nordic disciplines. In 1936 he won the ski-jumping and the Alpine downhill.

Most titles World Cup

The Alpine World Cup, (inst. 1967), has been won four times by Gustavo Thoeni (Italy) (b. 28 Feb 1951) in 1971–3 and 1975. The women's cup has been won six times by the 1,67 m 5 ft 6 in 68 kg 150 lb Annemarie Moser née Pröll (b. 27 Mar 1953) of Austria in 1971–5 and 1979. From Dec 1972 to Jan 1974 she completed a record sequence of 11 consecutive downhill wins. She holds the women's record of 62 individual event wins (1970–9). The most is 66 by Ingemar Stenmark (Sweden) (b. 18 Mar 1956) in 1974–82, including a record 14 in one season in 1979. The cross-country World Cup (inst. 1979) was first won by Oddvar Brå (Norway) with the women's title won by Galina Koulakova (USSR). The jumping World Cup (inst. 1980) was first won by Hubert Neupert (Austria).

Most titles British

The most British skiing overall titles won is four by Stuart Fitzsimmons (b. 28 Dec 1956) in 1973, 1975–6 and 1979. The most ladies' titles won is four by Isobel M. Roe (1938–9, 1948–9), Gina Hathorn (b. 6 July 1949) (1966, 1968–70), and Valentina Iliffe (b. 17 Feb 1956) (1975–6, 1979–80).

Ski-jumping

The longest ski-jump ever recorded is one of 181 m 593 ft 10 in by Bogdan Norcic (Yugoslavia) (b. 19 Sept 1953) who fell on landing at Planica, Yugoslavia in February 1977. The official record is 180 m 590 ft 6 in by Armin Kogler (b. 4 Sept 1959) (Austria) at Oberstdorf, W. Germany, on 26 Feb 1981. The female record is 98 m 321 ft 6 in jumped by Anita Wold (b. 21 Sept 1956) (Norway) at Okura, Sapporo, Japan on 14 Jan 1975.

The longest dry ski-jump is 92 m 301 ft 10 in by Hubert Schwarz (W. Germany) at Berchtesgarden, W. Germany on 30 June 1981.

Highest speed

The highest speed claimed for any skier is 203.16 km/h 126.24 mph by Franz Weber (Austria). The fastest by a woman is 179.10 km/h 111.29 mph by Marty Martin-Kunz (USA). Both were achieved at Silverton, Colorado, USA on 24 Apr 1982. The highest average speed in the Olympic downhill race was in 1976 on the Patscherkofel course, Innsbruck, Austria by Franz Klammer (b. 3 Dec 1953) of Austria with 102,828 km/h 63.894 mph on 5 Feb 1976.

Closest Verdict

The narrowest winning margin in a championship ski race was one hundredth of a second by Thomas Wassberg (Sweden) (b. 23 Mar 1956) over Juha Mieto (Finland) in the Olympic 15 km Cross-country race at Lake Placid, USA on 17 Feb 1980. His winning time was 41 min 57.63 sec.

Highest altitude

Yuichiro Miura (Japan) (b. 1933) skied 2.5 km 1.6 miles down Mt Everest on 6 May 1970 starting from 8100 m 26,574 ft.

Greatest descent

The greatest reported aggregate elevation descended in 12 hr is 416,000 ft 126,796 m by Sarah Ludwig, Scott Ludwig and Timothy B. Gaffney at Mount Brighton, Brighton, Michigan, USA on 16 Feb 1974.

Steepest descent

The steepest descents in alpine skiing history have been by Sylvain Saudan. At the start of his descent from Mont Blanc on the north-east side down the Couloir Gervasutti from 4248 m 13,937 ft on 17 Oct 1967 he skied to gradients in excess of 60°.

Longest run

The longest all-downhill ski run in the world is the Weissfluhjoch-Küblis Parsenn course, near Davos, Switzerland, which measures 12.23 km 7.6 miles. The run from the Aiguille du Midi top of the Chamonix lift (vertical lift 2492 m 8176 ft) across the Vallée Blanche is 20.9 km 13 miles.

Longest races

The world's longest ski races are the Grenader, run just North of Oslo, Norway and the König Ludwig Lauf in Oberammergau, W. Germany. Both are of 90 km 55.9 miles. The Canadian Ski Marathon at 120 km 74.6 miles is longer, but is run in two parts on consecutive days.

The world's greatest Nordic ski race is the Vasaloppet, which commemorates an event of 1521 when Gustav Vasa (1496–1560), later King Gustavus Eriksson, fled 85.8 km 53.3 miles from Mora to Sälen, Sweden. He was overtaken by loyal, speedy scouts on skis, who persuaded him to return eastwards to Mora to lead a rebellion and become the king of Sweden. The reenactment of this return journey is now an annual event, with a record 12,000 entrants (including 188 women) in 1981. The fastest time is 4 hr 5 min 58 sec by Ola Hassis (Sweden) on 4 Mar 1979.

The Vasaloppet is now the longest of ten long distance races in ten countries constituting the world loppet.

The longest downhill race is the Inferno in Switzerland, 14 km 8.7 miles from the top of the Schilthorn to Lauterbrunnen. In 1981 there was a record entry of 1401, with Heinz Fringer (Swit) winning in a record 15 min 44.57 sec.

24 hours

In 24 hr Dan Quinlan (b. 12 Nov 1960) (USA) covered 290.8 km 180.7 miles at Williston, Vermont, USA on 17–18 Feb 1982.

Backflip

The greatest number of skiers to perform a back layout flip while holding hands is 28 at Bromont, Quebec, Canada, on 10 Feb 1982 for the 'That's Incredible' TV show.

Marathons

The longest non-stop nordic skiing marathon was one lasting 48 hr by Onni Savi, aged 35, of Padasjoki on 19–21 Apr 1966.

Pat Purcell and John McGlynn (USA) completed 81 hr 12 min of alpine skiing at Holiday Mountain, Monticello, NY, USA on 1–4 Feb 1979.

MOST OLYMPIC TITLES—SKIING

Men Alpine
Men Nordic
Women Alpine
Women Nordic

3
3
41
2
2
2
2
22
23
44
Anton 'Toni' Sailer (Austria) (b. 17 Nov 1935)
Jean-Claude Killy (France) (b. 30 Aug 1943)
Sixten Jernberg (Sweden) (b. 6 Feb 1929)
Andrea Mead-Lawrence (USA) (b. 19 Apr 1932)
Marielle Goitschel (France) (b. 28 Sept 1945)
Marie-Therese Nadig (Switz) (b. 8 Mar 1954)
Rosi Mittermaier (now Neureuther) (W. Germany) (b. 5 Aug 1950)
Hanni Wenzel (Liechtenstein) (b. 14 Dec 1956)
Galina Koulakova (USSR) (b. 29 Apr 1942)

Downhill, slalom, giant slalom, 1956
Downhill, slalom, giant slalom, 1968
50 km, 1956; 30 km, 1960; 50 km and 4 × 10 km, 1964
Slalom, giant slalom, 1952
Giant slalom, 1964; slalom, 1968
Downhill, giant slalom, 1972
Downhill, slalom, 1976
Giant slalom, slalom 1980
5 km, 10 km and 3 × 5 km relay, 1972; 4 × 5 km relay, 1976.

¹ Jernberg also won three silver and two bronze for a record nine Olympic medals.
² Also won silver medal in Giant Slalom in 1976.

³ Wenzel won a silver in the 1980 Downhill and a bronze in the 1976 Slalom.
⁴ Koulakova also won two silver and two bronze medals in 1968, 1976 and 1980.



(left) Frank Ullrich, winner of a record number of individual world titles at the biathlon, which combines cross-country skiing and shooting. (Steve Powell, *All-Sport*) (right) The Mahre twins, Steve (left) and Phil (right). Phil won the Alpine World Cup for the second successive year in 1982, while Steve was the 1982 World Giant Slalom champion, America's first men's gold medallist. (Sporting Pictures (UK) Ltd)

Ski-Parachuting

The greatest recorded vertical descent in parachute ski-jumping is 3300 ft 1006 m by Rick Sylvester (b. 3 Apr 1942) (US) who on 28 July 1976 skied off the 6600 ft 2011 m summit of Mt Asgard in Auyuituq National Park, Baffin Island, Canada, landing on the Turner Glacier, the jump for a sequence in the James Bond film 'The Spy Who Loved Me'.

Ski-Bob Origins

The ski-bob was invented by J. C. Stevenson of Hartford, Connecticut, USA in 1891, and patented (No. 47334) on 19 Apr 1892 as a 'bicycle with ski-runners'. The Fédération Internationale de Skibob was founded on 14 Jan 1961 in Innsbruck, Austria and the first world championships were held at Bad Hofgastein, Austria in 1967. The Ski-Bob Association of Great Britain was registered on 23 Aug 1967. The highest speed attained is 166 km/h 103.4 mph by Erich Brenner (b. 1940) (Austria) at Cervinia, Italy, in 1964.

Ski-Bob World Championships

The only ski-bobbers to retain a world championship are Alois Fischbauer (Austria), (b. 6 Oct 1951), 1973 and 1975, Robert Mühlberger (W. Germany), 1979 and 1981, Gerhilde Schiffkorn (Austria), (b. 22 Mar 1950) the women's title, 1967 and 1969, and Gertrude Geberth (Austria), (b. 18 Oct 1951), 1971 and 1973.

Snowmobile

A record speed of 148.6 mph 239.1 km/h was set by Tom Earhart (USA) in a Budweiser-Polaris snowmobile designed and owned by Bob Gaudreau at Lake Mille Lacs, Minnesota, USA on 25 Feb 1982. (See also p. 142.).

Longest lift

The longest chair lift in the world is the Alpine Way to Kosciuszko Châlet lift above Thredbo, near the Snowy Mountains, New South Wales, Australia. It takes from 45 to 75 min to ascend the 3.5 miles 5.6 km, according to the weather. The highest is at Chacaltaya, Bolivia, rising to 5029 m 16,500 ft. The longest gondola ski lift, at Killington, Vermont, USA, is 3.4 miles 5.48 km long.

BIATHLON

The biathlon, which combines skiing and shooting was first included in the Olympic Games in 1960, and world championships were first held in 1958.

Most titles Olympic Games

Magnar Solberg (Norway), in 1968 and 1972, is the only man to have won two Olympic individual titles. The USSR have won all four 4 x 7.5 km relay titles, 1968-80. Aleksandr Tikhonov (b. 2 Jan 1947) who was a member of each team also won a silver in the 1968 20 km.

Most titles World Championship

Frank Ullrich (GDR) has won a record five world titles, all at 10 km, from 1978 to 1982, including his 1980 Olympic win.

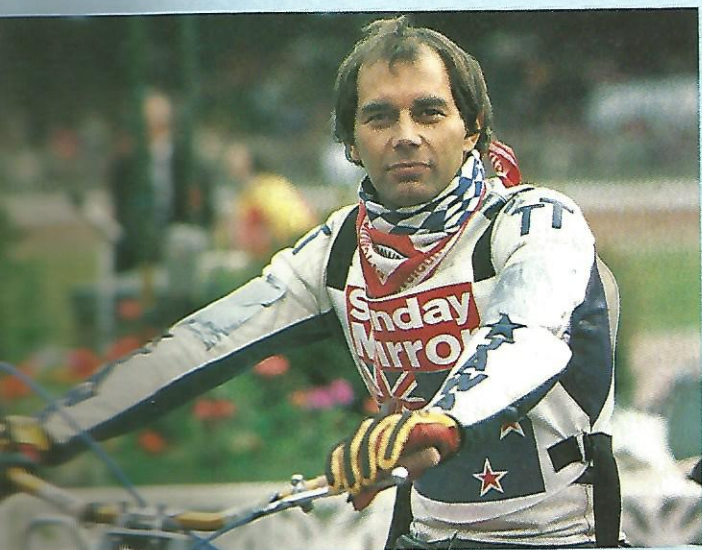
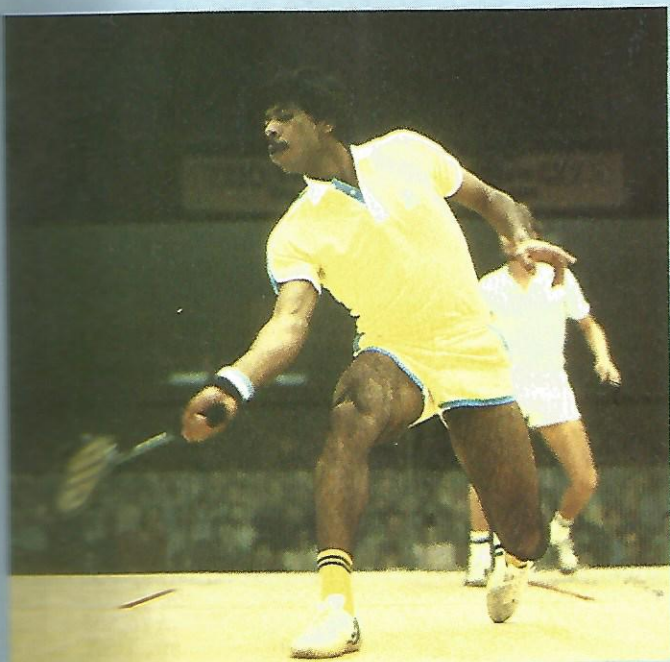
SOFTBALL

Origins

Softball, the indoor derivative of baseball, was invented by George Hancock at the Farragut Boat Club of Chicago, Illinois in 1887. Rules were first codified in Minneapolis, Minnesota in



Top: The slow pitch Softball marathon team. (centre) Jahangir Khan, who succeeded Geoff Hunt as the world's top squash player. At 17 years 354 days he became the youngest ever winner of the World Open in 1981. (Colorsport) (below) Ivan Mauger, winner of a record six world speedway championships, and also the only man to do so in three consecutive years. (Colorsport)



1895 as Kitten Ball. The name Softball was introduced by Walter Hakanson at a meeting of the National Recreation Congress in 1926. The name was adopted throughout the USA in 1930. Rules were formalised in 1933 by the International Joint Rules Committee for Softball and adopted by the Amateur Softball Association of America. The International Softball Federation was formed in 1950 as governing body for both fast pitch and slow pitch.

Most titles

The USA has won the men's world championship (inst. 1966) four times, 1966, 1968, 1976 (shared), and 1980. The USA has twice won the women's title (inst. 1965) in 1974 and 1978.

Marathons

The longest fast pitch marathon is 56 hr 10 min by two teams of nine men at Gardner, Massachusetts, USA on 5-7 Sept 1981. The longest for slow pitch is 91 hr 3 min by two teams of ten players at Marshfield, Massachusetts, USA on 2-6 Sept 1981.

WORLD CHAMPIONSHIP RECORDS

MEN			
Most runs	12	Generoso Lopez (Venezuela)	1966
Most home runs	4	Robert 'Bob' Burrows (Canada)	1976
Most hits	17	Basil McLean (New Zealand)	1976
RBI's	14	Chuck Teuscher (USA)	1966
"	14	Robert 'Bob' Burrows (Canada)	1976
Highest average	.556	Seiichi Tanaka (Japan)	1980
Most wins	6	Owen Wallford (New Zealand)	1976
"	6	Owen Wallford (USA, formerly NZ)	1980
Most innings pitched	59	Ty Stofflet (USA)	1976
Most strikeouts	98	Ty Stofflet (USA)	1976
Most perfect games	1	Joe Lynch (USA); Chuck Richard (USA); Dave Ruthowsky (Canada)	1976 1968
WOMEN			
Most runs	13	Kathy Elliott (USA)	1974
Most hits	17	Miyoko Naruse (Japan)	1974
RBI's	11	Miyoko Naruse (Japan); Keiko Usui (Japan); Kathy Elliott (USA)	1974
Highest average	.550	Tamara Bryce (Panama)	1978
Most wins	6	Lorraine Woolley (Australia)	1965
"	6	Nancy Welborn (USA)	1970
Most innings pitched	50	Nancy Welborn (USA)	1970
Most strikeouts	76	Joan Joyce (USA)	1974
Most perfect games	2	Joan Joyce (USA)	1974

SPEEDWAY

Origins

Motorcycle racing on large dirt track surfaces has been traced back to 1902 in the United States. The first organized 'short track' races were at the West Maitland (New South Wales, Australia) Agricultural Show in November 1923. The sport evolved in Great Britain with small diameter track racing at Droylsden, Greater Manchester on 25 June 1927 and a cinder track event at High Beech, Essex, on 19 Feb 1928. The National League was instituted in 1932. The Wembley Lions who won in 1932, 1946-7, 1949-53, had a record eight victories. Since the National Trophy knock-out competition was instituted in 1931, Belle Vue (Manchester) have been most successful with nine victories in 1933-7, 1946-7, 1949 and 1958. In 1965 the National League was replaced by the British League which Belle Vue have won three times in succession (1970-2).

Most world titles

The world speedway championship was inaugurated at Wembley, London in September 1936. The most wins have been six by Ivan Gerald Mauger, MBE (b. Christchurch, NZ, 4 Oct 1939) in 1968-70, 1972, 1977 and 1979. Barry Briggs, MBE (b. Christchurch, NZ, 30 Dec 1934) made a record 17 consecutive appearances in the finals (1954-70) and won the world title in 1957-8, 1964 and 1966. He also scored a record 201 points in world championship competition. New Zealanders have won the title on 12 occasions.

England have most wins in the World Team Cup (inst. 1960) with eight, and the World Pairs Championship (inst. 1969) with five.

Most points

In League racing the highest score recorded was when Bristol

defeated Glasgow (White City) in National League Division 2 by 70-14 in 1949. In the current National League, Crayford beat Workington by 65-12 on 15 July 1980. The highest number of League points scored by an individual in a season was 480 by Pete Lansdale for Plymouth in National League Division 3 in 1949.

SQUASH RACKETS

Earliest champion

Although rackets (US spelling racquets) with a soft ball was played in 1817 at Harrow School, Harrow, Greater London, there was no recognised champion of any country until John A. Miskey of Philadelphia won the American Amateur Singles Championship in 1907.

Most World Amateur titles

Australians have won the individual title (inst. 1967) five times and the team title four times. Geoffrey B. Hunt (b. 11 Mar 1947) (Australia) won the individual title three times (1967, 1969 and 1971).

World Open title

The world Open championship (inst. 1976) has been won four times by Geoffrey Hunt (Australia) in 1976, 1977, 1979 and 1980.

Most titles Open Championship

The most wins in the Open Championship (amateurs or professionals), held annually in Britain, is eight by Geoffrey Hunt in 1969, 1974, 1976-81. Hashim Khan (Pakistan) (b. 1915) won seven times and has also won the Vintage title five times in 1978-82.

The most wins in the Women's Squash Rackets Championship is 16 by Heather Pamela McKay, MBE (née Blundell) (b. Australia, 31 July 1941) from 1961 to 1977. She also won the World Open title in 1976 and 1979. In her career from 1959 to 1980 she only lost two games.

Most titles Amateur Championship

The most wins in the Amateur Championship is six by Abdel Fattah Amr Bey (b. Egypt, 14 Feb 1910) later appointed Ambassador in London, who won in 1931-3 and 1935-7. Norman Francis Borrett (b. 1 Oct 1917) of England won in 1946-50.

Most titles Professional Championship

The most wins in the Professional Championship of Britain is ten by John Henry 'Jack' Giles, MBE from 1954 to 1963. He relinquished the title in 1964 undefeated.

Longest and shortest championship matches

The longest recorded championship match was one of 2 hr 35 min in the British Amateur Championships at Wembley on 12 Dec 1976 when Murray Lilley (NZ) beat Barry O'Connor (Kent) 9-3, 10-8, 2-9, 7-9, 10-8. The second game lasted 58 min and there were 98 lets in the match. Deanna Murray beat Christine Rees in only 9½ min in a Ladies Welsh title match at Rhos-on-Sea, Clwyd, on 21 Oct 1979.

Most international appearances

Men			
Scotland	88	Christopher Wilson	1969-81
England	76	Philip Norman Ayton	1968-79
Wales	68	Robert Anthony Dolman	1960-80
N. Ireland	53	Robert Weir	1969-77
Women			
Scotland	65	Dorothy Sharp (née McNeill)	1963-80
Wales	48	Pat Connies-Laing	1954-76
		Rachel Campin (née Byrne)	1947-69

Longest span of internationals

Sheila Macintosh (née Speight) (b. 8 Sept 1930), the 1960 British Champion, played for England & Wales in April 1949 and in December 1971—a span of 22 years 8 months. Among men Lawrence John Verney (b. 19 July 1924) was only marginally less, representing Wales on 3 Feb 1950 and on 17 Feb 1972.

Marathons

The longest squash marathon has been 120 hr 51 min by Peter Fairlie (b. 18 Dec 1957) at the Bridge of Allan Sports Club, Scotland on 30 June-5 July 1979. (This category will in future be confined to two players only.)

SURFING

Origins

The traditional Polynesian sport of surfing in a canoe (*ehoroee*) was first recorded by Captain James Cook, RN, FRS (1728-79) on his first voyage at Tahiti in December 1771. Surfing on a board (*Amo Amo iluna ka lau oka nalu*) was first described 'most perilous and extraordinary ... altogether astonishing and is scarcely to be credited' by Lt (later Capt) James King, RN, FRS in March 1779 at Kealahakua Bay, Hawaii Island. A surfer was first depicted by this voyage's official artist John Webber. The sport was revived at Waikiki by 1900. Hollow boards were introduced in 1929 and the light plastic foam type in 1956.

Most titles

World Championships were inaugurated in May 1964 at Sydney, Australia. The only surfer to win two titles has been Joyce Hoffman (US) in 1965 and 1966.

Highest waves ridden

Makaha Beach, Hawaii provides the reputedly highest consistently high waves often reaching the rideable limit of 30-35 ft 9-10 m. The highest wave ever ridden was the tsunami of 'perhaps 50 ft 15.24 m', which struck Minole, Hawaii on 3 Apr 1868, and was ridden to save his life by a Hawaiian named Holua.

Longest ride Sea wave

About four to six times each year rideable surfing waves break in Matanchen Bay near San Blas, Nayarit, Mexico which makes rides of c. 5700 ft 1700 m possible.

Longest ride River bore

The longest recorded rides on a river bore have been set on the Severn bore, England. The official British Surfing Association record for riding a surfboard in a standing position is 0.7 mile 1.1 km and for the longest ride on a surfboard standing or lying down is 2.94 miles 4.73 km by Colin Kerr Wilson (b. 23 June 1954) on 23 May 1982.

SWIMMING

Earliest references

In Japan, swimming in schools was ordered by Imperial edict of Emperor Go-Yozei (1586-1611) in 1603 but competition was known from 36 BC. Sea water bathing was fashionable at Scarborough, North Yorkshire as early as 1660. In Great Britain competitive swimming originated from at least 1791. The earliest pool was Pearless Pool, North London, opened in 1743. Swimming races were particularly popular in the 1820s in Liverpool, where the earliest pool opened at St George's Pier Head, Liverpool in 1828.

Largest pools

The largest swimming pool in the world is the sea-water Orthlieb Pool in Casablanca, Morocco. It is 480 m 1574 ft long and 75 m 246 ft wide, and has an area of 3.6 ha 8.9 acres. The largest land-locked swimming pool with heated water was the Fleish-hacker Pool on Sloat Boulevard, near Great Highway, San Francisco, California, USA. It measured 1000 × 150 ft 304.8 × 45.7 m and up to 14 ft 4.26 m deep and contained 7,500,000 US gal 28 390 hectolitres of heated water. It was opened on 2 May 1925 but has now been abandoned. The world's largest competition pool is that at Osaka, Japan, which accommodates 13,614 spectators. The largest in use in the United Kingdom is the Royal Commonwealth Pool, Edinburgh, completed in 1970 with 2000 permanent seats, but the unused pool at Earls Court, London (opened 1937) has seating for some 12,000 spectators.

Fastest swimmer

The fastest 50 m in a 50 m pool is 22.54 sec by Robin Leamy (b. 1 Apr 1961) (USA), averaging 4.96 mph 7.98 km/h, at Milwaukee, Wisconsin, USA on 15 Aug 1981. The fastest

WORLD RECORDS

recognised by the *Fédération Internationale de Natation Amateur* as at 16 Aug 1982

MEN				
Event	Time Min. sec.	Name and Country	Place	Date
FREESTYLE				
100 metres	49.36	Ambrose 'Rowdy' Gaines (USA)	Austin, Texas, USA	3 Apr 1956
200 metres	1:48.93	Ambrose 'Rowdy' Gaines (USA)	Mission Viejo, Cal., USA	20 July 1955
400 metres	3:49.57	Vladimir Salnikov (USSR)	Moscow, USSR	12 Mar 1973
		Vladimir Salnikov (USSR)	Kiev, USSR	14 July 1972
800 metres	7:52.83	Vladimir Salnikov (USSR)	Moscow, USSR	14 Feb 1973
1500 metres	14:56.35	Vladimir Salnikov (USSR)	Moscow, USSR	13 Mar 1973
4 × 100 metres relay	3:19.74	United States: (Jack Babashoff, Ambrose Gaines, James Montgomery, David McCagg)	West Berlin	22 Aug 1972
4 × 200 metres relay	7:20.82	United States: (Bruce Furniss, William Forrester, Bobby Hackett, Ambrose Gaines)	West Berlin	24 Aug 1972
BREASTSTROKE				
100 metres	1:02.62	Steven Lundquist (USA)	Mission Viejo, Cal., USA	20 July 1955
200 metres	2:14.77	Victor Davis (Canada)	Guayaquil, Ecuador	6 Aug 1972
BUTTERFLY				
100 metres	53.81	William Paulus (USA)	Austin, Texas, USA	3 Apr 1956
200 metres	1:58.01	Craig Beardsley (USA)	Kiev, USSR	22 Aug 1972
BACKSTROKE				
100 metres	55.49	John Naber (USA)	Montreal, Canada	19 July 1973
200 metres	1:59.19	John Naber (USA)	Montreal, Canada	24 July 1973
MEDLEY				
200 metres	2:02.78	Alex Baumann (Canada)	Heidelberg, W. Germany	29 July 1967
400 metres	4:19.78	Ricardo Prado (Brazil)	Guayaquil, Ecuador	3 Aug 1972
4 × 100 metres relay	3:40.34	United States: (Richard Carey, Steven Lundquist, Matthew Gribble, Ambrose 'Rowdy' Gaines)	Guayaquil, Ecuador	8 Aug 1972
WOMEN				
FREESTYLE				
100 metres	54.79	Barbara Krause (E. Germany)	Moscow, USSR	21 July 1973
200 metres	1:58.23	Cynthia Woodhead (USA)	Tokyo, Japan	3 Sept 1966
400 metres	4:06.28	Tracey Wickham, MBE (Australia)	West Berlin	24 Aug 1972
800 metres	8:24.62	Tracey Wickham, MBE (Australia)	Edmonton, Canada	5 Aug 1972
1500 metres	16:04.49	Kim Linehan (USA)	Fort Lauderdale, Florida, USA	19 Aug 1971
4 × 100 metres relay	3:42.71	E. Germany: (Barbara Krause, Caren Metschuck, Ines Diers, Sarina Hulskenbeck)	Moscow, USSR	27 July 1973
4 × 200 metres relay	8:07.44	Mission Viejo (USA)	Milwaukee, Wisconsin, USA	14 Aug 1968
BREASTSTROKE				
100 metres	1:08.60	Ute Geweniger (E. Germany)	Split, Yugoslavia	8 Sept 1967
200 metres	2:28.36	Lina Kachushite (USSR)	Potsdam, E. Germany	6 Apr 1973
BUTTERFLY				
100 metres	57.93	Mary Meagher (USA)	Milwaukee, Wisconsin, USA	16 Aug 1968
200 metres	2:05.96	Mary Meagher (USA)	Milwaukee, Wisconsin, USA	13 Aug 1968
BACKSTROKE				
100 metres	1:00.86	Rica Reinisch (E. Germany)	Moscow, USSR	23 July 1973
200 metres	2:09.91	Kornelia Sirch (E. Germany)	Guayaquil, Ecuador	8 Aug 1972
MEDLEY				
200 metres	2:11.73	Ute Geweniger (E. Germany)	East Berlin	4 July 1967
400 metres	4:36.10	Petra Schneider (E. Germany)	Guayaquil, Ecuador	2 Aug 1972
4 × 100 metres relay	4:05.88	E. Germany: (Kristin Otto, Ute Geweniger, Ines Geissler, Birgit Meinecke)	Guayaquil, Ecuador	8 Aug 1972

World records can only be set in 50 m pools. FINA has not recognised records for Imperial distances since 30 Apr 1969.

BRITISH NATIONAL (long course) RECORDS

recognised by the Amateur Swimming Federation of Great Britain as at 16 Aug 1982

MEN				
Event	Time Min. sec.	Name	Place	Date
FREESTYLE				
100 metres	51.88	Martin Smith	Moscow, USSR	26 July 1973
200 metres	1:52.47	Gordon Downie	Montreal, Canada	19 July 1973
400 metres	3:55.93	Andrew Astbury	Split, Yugoslavia	10 Sept 1966
800 metres	8:13.83	Simon Gray	Blackpool, Lancashire	23 May 1966
1500 metres	15:31.42	Simon Gray	West Berlin	24 Aug 1972
4 × 100 metres relay	3:28.76	National team: (Martin Smith, Mark Taylor, Ricky Burrell, David Dunne)	West Berlin	22 Aug 1972
4 × 200 metres relay	7:30.81	United Kingdom: (Douglas Campbell, Philip Hubble, Martin Smith, Andrew Astbury)	Moscow, USSR	23 July 1973
BREASTSTROKE				
100 metres	1:03.15	Adrian Moorhouse	Guayaquil, Ecuador	2 Aug 1972
200 metres	2:15.11	David Andrew Wilkie, MBE	Montreal, Canada	24 July 1973

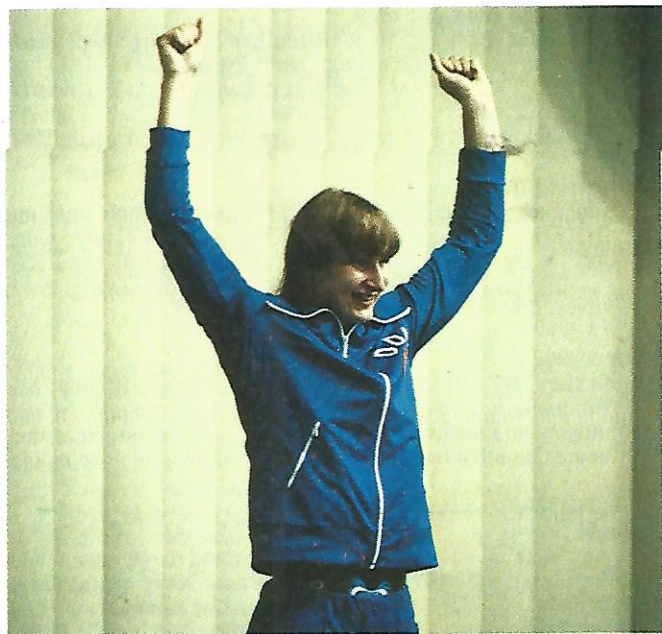
BUTTERFLY				
100 metres	55.42	Gary Abraham	Moscow, USSR	23 July 1980
200 metres	2:00.21	Philip Hubble	Split, Yugoslavia	11 Sept 1981
BACKSTROKE				
100 metres	57.72	Gary Abraham	Moscow, USSR	24 July 1980
200 metres	2:04.23	Douglas Campbell	Moscow, USSR	26 July 1980
INDIVIDUAL MEDLEY				
200 metres	2:06.25	David Andrew Wilkie, MBE	Long Beach, California, USA	4 Apr 1976
400 metres	4:27.70	Simon Gray	Edmonton, Canada	5 Aug 1978
4 × 100 metres relay	3:47.71	United Kingdom: (Gary Abraham, Duncan Goodhew, David Lowe, Martin Smith)	Moscow, USSR	24 July 1980
WOMEN				
FREESTYLE				
100 metres	56.60	June Croft	Amersfoort, Netherlands	31 Jan 1982
200 metres	2:00.08	June Croft	Blackpool, Lancashire	17 Apr 1982
400 metres	4:11.67	Jackie Willmott	Guayaquil, Ecuador	4 Aug 1982
800 metres	8:27.48	Jackie Willmott	Guayaquil, Ecuador	7 Aug 1982
1500 metres	16:46.48	Jackie Willmott	Edinburgh, Scotland	25 Apr 1980
4 × 100 metres relay	3:51.06	United Kingdom: (Nicola Fibbens, Jackie Willmott, Heidi Turk, June Croft)	Split, Yugoslavia	8 Sept 1981
BREASTSTROKE				
100 metres	1:11.05	Susannah 'Suki' Brownsdon	Split, Yugoslavia	8 Sept 1981
200 metres	2:34.43	Susannah 'Suki' Brownsdon	Kiev, USSR	3 July 1981
BUTTERFLY				
100 metres	1:01.93	Ann Osgerby	Moscow, USSR	23 July 1980
200 metres	2:14.72	Ann Osgerby	Split, Yugoslavia	8 Sept 1981
BACKSTROKE				
100 metres	1:04.60	Helen Jameson	Moscow, USSR	20 July 1980
200 metres	2:17.66	Jane Admans	Split, Yugoslavia	11 Sept 1981
INDIVIDUAL MEDLEY				
200 metres	2:17.31	Sharron Davies	Blackpool, Lancashire	20 Apr 1980
400 metres	4:46.83	Sharron Davies	Moscow, USSR	26 July 1980
4 × 100 metres relay	4:12.24	United Kingdom: (Helen Jameson, Margaret Kelly, Ann Osgerby, June Croft)	Moscow, USSR	20 July 1980

by a woman is 25.79 sec by Jill Sterkel (b. 1961) (USA), averaging 4.34 mph 6.98 km/h at Austin, Texas, USA on 3 Apr 1981.

Most world records

Men, 32, Arne Borg (Sweden) (b. 18 Aug 1901), 1921–9. Women, 42, Ragnhild Hveger (Denmark) (b. 10 Dec 1920), 1936–42. Under modern conditions (only metric distances in

Ute Geweniger won the Olympic 100 m breaststroke title in 1980 and went on to break the world record for that event three times in 1981, when she won five gold medals at the European Championships. (Robert Martin, *All-Sport*)



50 m pools) the most is 26 by Mark Andrew Spitz (USA) (b. 10 Feb 1950), 1967–72, and 23 by Kornelia Ender (now Matthes) (b. Plauen, E. Germany, 25 Oct 1958), 1973–6.

Most world titles

In the world championships (inst 1973) the most medals won is ten by Kornelia Ender (E. Germany) with eight gold and two silver in 1973 and 1975. The most by a man is seven by James Montgomery (USA) (b. 24 Jan 1955), six gold and a bronze in 1973 and 1975. The most medals in a single championships is six by Tracy Caulkins (USA) (b. 11 Jan 1963) in 1978 with five golds and a silver.

OLYMPIC RECORDS

Most gold medals Men

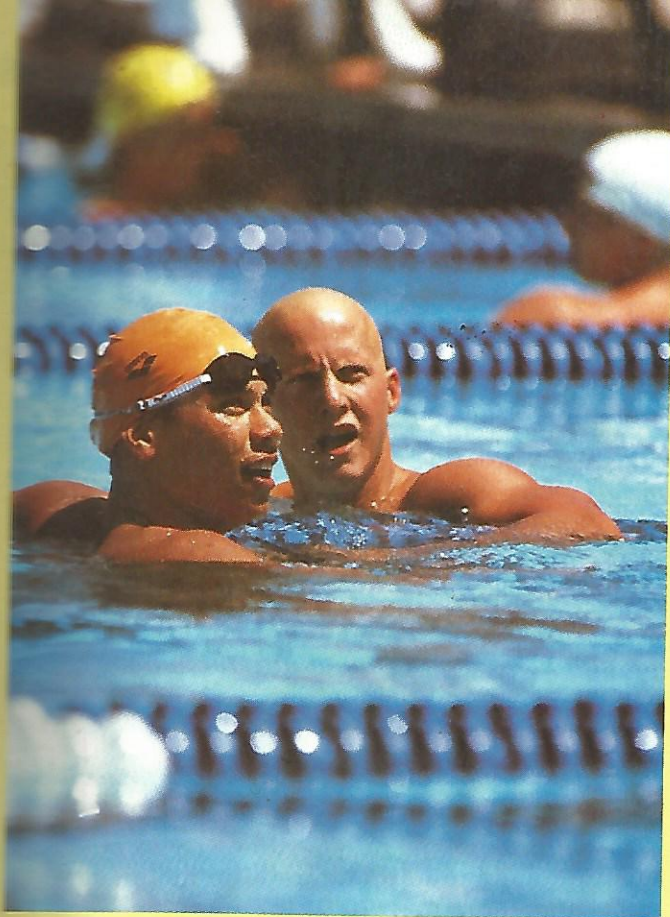
The greatest number of Olympic gold medals won is nine by Mark Spitz (USA): 100 m and 200 m freestyle 1972; 100 m and 200 m butterfly 1972; 4 × 100 m freestyle 1968 and 1972; 4 × 200 m freestyle 1968 and 1972; 4 × 100 m medley 1972. *All but one of these performances (the 4 × 200 m freestyle of 1968) were also new world records.*

Most gold medals Women

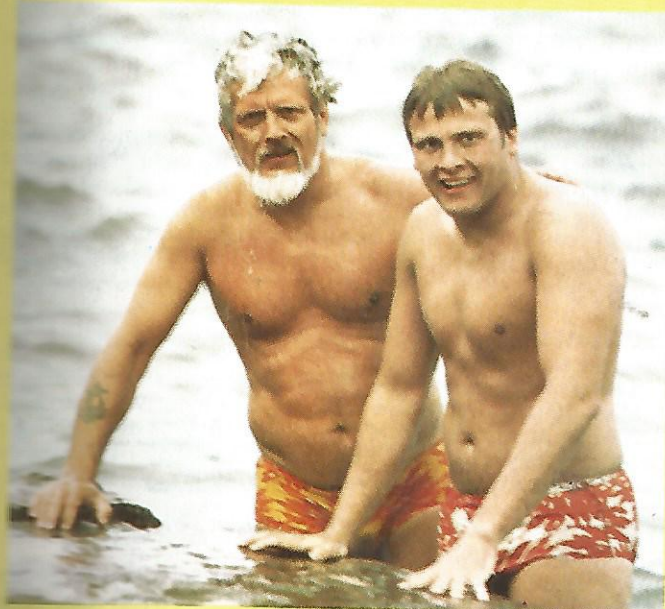
The record number of gold medals won by a woman is four shared by Patricia McCormick (*née* Keller) (USA) (b. 12 May 1930), the high and springboard diving double in 1952 and 1956 (also the female record for individual golds), Dawn Fraser, OBE (b. Sydney, Australia, 4 Sept 1937), the 100 m freestyle (1956, 1960 and 1964) and the 4 × 100 m freestyle (1956) and Kornelia Ender (E. Germany), the 100 and 200 m freestyle, 100 m butterfly and 4 × 100 m medley in 1976. Dawn Fraser is the only swimmer to win the same event on three successive occasions.

Most gold medals British

The record number of gold medals won by a British swimmer (excluding Water Polo, *q.v.*) is four by Henry Taylor (1885–1951) in the mile freestyle (1906), 400 m freestyle (1908), 1500 m freestyle (1908) and 4 × 200 m freestyle (1908). None of the seven British women who have won a gold medal won a second title.



(above) Craig Beardsley (left) with Mike Bruner, whom he succeeded as world record holder for the 200 metres butterfly. (*All-Sport*) (bottom) Albert Rizzo spent three days just treading water in the sea off Malta in September 1980 to better a record set fifty years earlier by his grandfather. (below) Jon Erikson (right), the first swimmer to make a triple crossing of the English Channel, with his father, Ted. Both had held records for the fastest double crossing.



Most medals Men

The most medals won is 11 by Mark Spitz who in addition to nine golds (see p. 321), won a silver (100 m butterfly) and a bronze (100 m freestyle) both in 1968.

Most medals Women

The most medals won by a woman is eight by Dawn Fraser, who in addition to her four golds (see p. 321) won four silvers (400 m freestyle 1956, 4 × 100 m freestyle 1960 and 1964, 4 × 100 m medley 1960), Kornelia Ender (see p. 321) who in addition to her four golds won four silvers (200 m individual medley 1972, 4 × 100 m medley 1972, 4 × 100 m freestyle 1972 and 1976) and Shirley Babashoff (USA) (b. 3 Jan 1957), who won two golds (4 × 100 m freestyle 1972 and 1976) and six silvers (100 m freestyle 1972, 200 m freestyle 1972 and 1976, 400 m and 800 m freestyle 1976, 4 × 100 m medley 1976).

Most medals British

The British record is eight by Henry Taylor who in addition to his four golds (see p. 321) won a silver (400 m freestyle 1906) and three bronzes (4 × 200 m freestyle 1906, 1912, 1920). The most medals by a British woman is four by M. Joyce Cooper (later Mrs John Badcock) (b. 18 Apr 1909) with one silver (4 × 100 m freestyle 1928) and three bronze (100 m freestyle 1928, 100 m backstroke 1928, 4 × 100 m freestyle 1932).

Most individual gold medals

The record number of individual gold medals won is four by Charles M. Daniels (USA) (1884–1973) (100 m freestyle 1906 and 1908, 220 yd freestyle 1904, 440 yd freestyle 1904); Roland Matthes (E. Germany) (b. 17 Nov 1950) with 100 m and 200 m backstroke 1968 and 1972; Mark Spitz and Pat McCormick (see p. 321). The most individual golds by a British swimmer is three by Henry Taylor (see p. 321).

Closest verdict

The closest recorded win in the Olympic Games was in the Munich 400 m individual medley final of 30 Aug 1972 when Gunnar Larsson (Sweden) (b. 12 May 1951) got the verdict over Tim McKee (USA) (b. 14 Mar 1953) by 2/1000th of a second—4 min 31.981 sec to 4 min 31.983 sec—a margin of 3 mm or the length grown by a finger nail in three weeks. This led to a change in international rules with timings and places decided only in hundredths.

DIVING

Most Olympic medals World

The most medals won by a diver are five (three gold, two silver) by Klaus Dibiasi (b. Austria, 6 Oct 1947) (Italy) in four Games from 1964 to 1976. He is also the only diver to win the same event (highboard) at three successive Games (1968, 1972 and 1976). Pat McCormick (see above) won four gold medals.

Most Olympic medals British

The highest placing by a Briton has been the silver medal by Beatrice Eileen Armstrong (later Purdy) (1894–1981) in the 1920 highboard event. The best placings by male divers are the bronze medals by Harold Clarke (b. 1888) (plain high diving, 1924) and Brian Phelps (b. 21 Apr 1944) (highboard, 1960).

Most world titles

Phil Boggs (USA) (b. 29 Dec 1949) has won three gold medals in 1973, 1975 and 1978 but Klaus Dibiasi (Italy) won four medals (two gold, two silver) in 1973 and 1975. Irina Kalinina (USSR) (b. 8 Feb 1959) has won five medals (three gold, one silver, one bronze) in 1973, 1975 and 1978.

Perfect dive

In the 1972 US Olympic Trials, in Chicago, Illinois, Michael Finneran (b. 21 Sept 1948) was awarded a score of 10 by all seven judges for a backward 1½ somersault, 2½ twist, from the high board, an achievement without precedent. (See also p. 186)

CHANNEL SWIMMING

Earliest

The first to swim the English Channel from shore to shore (without a life jacket) was the Merchant Navy captain Matthew Webb (1848–83) who swam breaststroke from Dover, England to Calais Sands, France, in 21 hr 45 min from 12.56 p.m. to

10.41 a.m., 24-25 Aug 1875. He swam an estimated 38 miles 61 km to make the 21-mile 33 km crossing. Paul Boyton (USA) had swum from Cap Gris-Nez to the South Foreland in his patent life-saving suit in 23 hr 30 min on 28-29 May 1875. There is good evidence that Jean-Marie Saletti, a French soldier, escaped from a British prison hulk off Dover by swimming to Boulogne in July or August 1815. The first crossing from France to England was made by Enrico Tiraboschi, a wealthy Italian living in Argentina, in 16 hr 33 min on 12 Aug 1923, to win the *Daily Sketch* prize of £1000. At the end of 1981, 228 persons on 366 occasions have succeeded.

The first woman to succeed was Gertrude Caroline Ederle (b. 23 Oct 1906) (USA) (see also p. 239) who swam from Cap Gris-Nez, France to Deal, England on 6 Aug 1926, in the then overall record time of 14 hr 39 min. The first woman to swim from England to France was Florence Chadwick (b. 1918) (USA) in 16 hr 19 min on 11 Sept 1951. The first Englishwoman to succeed was Mercedes Gleitze (later Carey) (1900-81) who swam from France to England in 15 hr 15 min on 7 Oct 1927.

Fastest

The official Channel Swimming Association (founded 1927) record is 7 hr 40 min by Penny Dean (b. 21 Mar 1955) of California, USA, from Shakespeare Beach, Dover to Cap Gris-Nez, France, on 29 July 1978.

The fastest crossing by a relay team is 7 hr 22 min, by six British swimmers, from England to France on 9 Aug 1981.

Earliest and latest

The earliest date in the year on which the Channel has been swum is 6 June by Dorothy Perkins (England) (b. 1942) in 1961, and the latest is 28 Oct by Michael Peter Read (GB) (b. 9 July 1941) in 1979.

Youngest and oldest

The youngest conqueror is Marcus Hooper (b. 14 June 1967) of Eltham, Kent who swam from Dover to Sangatte, France in 14 hr 37 min on 5-6 Aug 1979, when he was aged 12 yr 53 days. The oldest has been James Edward 'Doc' Counsilman (USA) (b. 28 Dec 1920), former US Olympic coach, who was aged 58 years 260 days when he swam from England to France in 13 hr 7 min on 14 Sept 1979. The youngest woman was Abba Adel Khairi (b. Egypt, 26 Sept 1960), aged 13 yr 326 days when she swam from England to France in 12 hr 30 min on 17 Aug 1974, and the oldest was Stella Ada Rosina Taylor (b. Bristol, Avon, 20 Dec 1929) aged 45 yr 350 days when she did the swim in 18 hr 15 min on 26 Aug 1975.

Double crossing

Antonio Abertondo (b. Buenos Aires, Argentina, 1919), swam from England to France in 18 hr 50 min (8.35 a.m. on 20 Sept to 3.25 a.m. on 21 Sept 1961) and after about 4 min rest returned to England in 24 hr 16 min, landing at St Margaret's Bay at 3.45 a.m. on 22 Sept 1961, to complete the first 'double crossing' in 43 hr 10 min. Kevin Murphy (b. Bushey Heath, Herts, 1949) completed the first double crossing by a Briton in 35 hr 10 min on 6 Aug 1970. The first swimmer to achieve a crossing both ways was Edward Harry Temme (1904-78) on 5 Aug 1927 and 19 Aug 1934.

The fastest double crossing was one of 19 hr 12 min by Cynthia 'Cindy' M. Nicholas (b. 20 Aug 1957) of Scarborough, Ont., Canada, on 4-5 Aug 1979. The fastest by a relay team is 16 hr 5½ min (including a 2 min rest) by six Saudi Arabian men on 11 Aug 1977.

Triple crossing

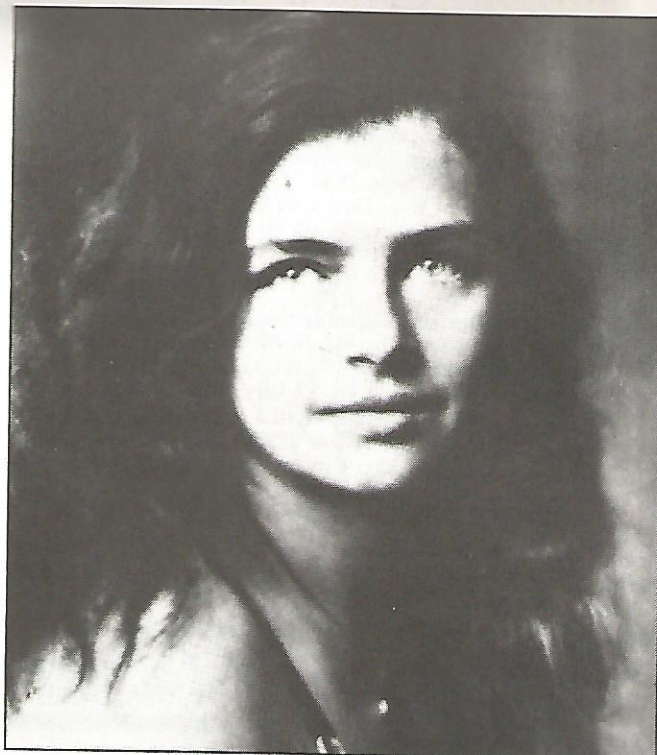
The first triple crossing was by Jon Erikson (USA) (b. 6 Sept 1954) in 38 hr 27 min on 11-12 Aug 1981.

Most conquests

The greatest number of Channel conquests is 24 by Michael Read, (GB) to 19 July 1982, including a record six in one year. Cindy Nicholas made her first crossing on 29 July 1975 and her fifteenth on 24 Aug 1981.

Underwater

The first underwater cross-Channel swim was achieved by Fred



Mercedes Gleitze became, on her eighth attempt, in 1927, the first Englishwoman to swim the Channel.

Baldasare (b. 1924) (USA), who completed a 42 mile 67.5 km distance from France to England with Scuba equipment in 18 hr 1 min on 10-11 July 1962.

LONG DISTANCE SWIMMING

Longest swims

The greatest recorded distance ever swum is 1826 miles 2938 km down the Mississippi, USA between Ford Dam near Minneapolis and Carrollton Ave, New Orleans, Louisiana, by Fred P. Newton, (b. 1903) of Clinton, Oklahoma from 6 July to 29 Dec 1930. He was 742 hr in the water.

The greatest distance covered in a continuous swim is 299 miles 481.5 km by Ricardo Hoffmann (b. 5 Oct 1941) from Corrientes to Santa Elena, Argentina in the River Parana in 84 hr 37 min on 3-6 Mar 1981.

The longest ocean swim claimed is one of 128.8 miles 207.3 km by Walter Poenisch Snr (USA) (b. 1914) who started from Havana, Cuba, and arrived at Little Duck Key, Florida, USA (in a shark cage and wearing flippers) 34 hr 15 min later on 11-13 July 1978.

The longest swim using the highly exhausting butterfly stroke exclusively was an officially measured 10 miles 16.09 km by twins James and Jonathan di Donato (USA) (b. 24 Oct 1953) off Fort Lauderdale, Florida, USA on 27 Aug 1980.

In 1966 Mihir Sen of Calcutta, India uniquely swam the Palk Strait from Sri Lanka to India (in 25 hr 36 min on 5-6 Apr); the Straits of Gibraltar (in 8 hr 1 min on 24 Aug); the length of the Dardanelles (in 13 hr 55 min on 12 Sept), the Bosphorus (in 4 hr on 21 Sept) and the length of the Panama Canal (in 34 hr 15 min on 29-31 Oct). He swam the English Channel in 14 hr 45 min on 27 Sept 1958.

Irish Channel

The swimming of the 23 mile 37 km wide North Channel from Donaghadee, Northern Ireland to Portpatrick, Scotland was first accomplished by Tom Blower of Nottingham in 15 hr 26 min in 1947. A record time of 11 hr 21 min was set by Kevin Murphy on 11 Sept 1970. The first Irish-born swimmer to

SPORTS, GAMES AND PASTIMES

Swimming/Table Tennis

achieve the crossing was Ted Keenan on 11 Aug 1973 in 52–56°F 11–13°C water in 18 hr 27 min.

Bristol Channel

The first person to achieve a crossing of the Bristol Channel was Kathleen Thomas (now Mrs F. Day) (b. Apr 1906) who swam from Penarth, South Glamorgan to Weston-super-Mare, Avon in 7 hr 20 min on 5 Sept 1927. The record for the longer swim from Glenthorne Cove, Devon to Porthcawl, Mid-Glamorgan is 10 hr 46 min by Jane Luscombe (b. 13 Jan 1961) of Jersey, CI, on 19 Aug 1976.

Lake swims

The fastest time for swimming the 22.7 mile 36.5 km long Loch Ness, is 10 hr 30 min by Kevin Murphy on 14 July 1976. The first successful swim was by Brenda Sherratt (b. 1948) of West Bollington, Cheshire on 26–27 July 1966. The fastest time for swimming Lake Windermere, 10.5 miles 16.9 km is 3 hr 49 min 56 sec by Karen Toole, 17, of Darlington on 5 Sept 1981. The fastest time for the Lake Windermere International Championship, 16.5 miles 26.5 km, is 6 hr 10 min 33 sec by Mary Beth Colpo (USA) (b. 1961) on 5 Aug 1978.

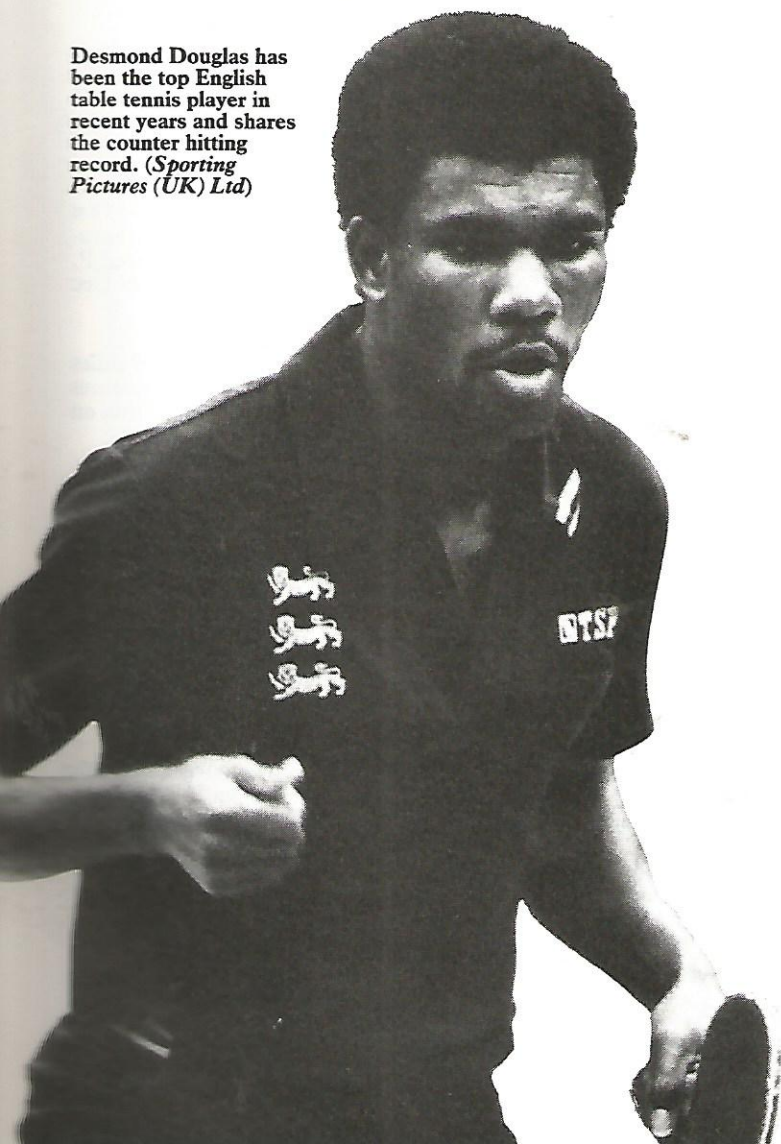
Longest duration

The longest duration swim ever achieved was one of 168 continuous hours, ending on 24 Feb 1941, by the legless Charles Zibbelman, *alias* Jimmy (b. 1894) of the USA, in a pool in Honolulu, Hawaii, USA. The longest duration swim by a woman was 87 hr 27 min in a salt-water pool by Myrtle Huddleston (USA) at Raven Hall, Coney Island, NY, USA, in 1931.

24 hours

J. Hestoy (Faroe Islands) was reported to have swum 89,174 km 55.41 miles in a pool in 1982.

Desmond Douglas has been the top English table tennis player in recent years and shares the counter hitting record. (*Sporting Pictures (UK) Ltd*)



Greatest lifetime distance

Gustave Brickner (b. 10 Feb 1912) of Charleroi, Pennsylvania, USA in 54 years to October 1981 had recorded 36,743 miles 59 140 km.

Relays

The longest recorded mileage in a 24 hr swim relay is 89 miles 1455.3 yd 144,562 km by a team of five from Loughborough University, Leicestershire on 13–14 May 1980. The fastest time recorded for 100 miles 160 km by a team of 20 swimmers is 21 hr 41 min 4 sec by the Dropped Sports Swim Club of Indiana State University at Terre Haute, Indiana, USA on 12–13 Mar 1980. Four swimmers from the Darien YMCA, Connecticut, USA covered 300 miles 483 km in relay in 122 hr 59 min 40 sec on 30 Nov 1980.

Underwater relay

Peter Saville, John Mason, Robert Mortimer and Duncan Winder, of Stratford upon Avon Sub Aqua Club, swam a relay of 279.099 miles 449,166 km underwater in 168 hr at the Hallam Inn, Birmingham on 30 June–7 July 1979.

Sponsored swimming

The greatest amount of money collected in a charity swim was £39,146.27 by the Lions Club of Jersey, CI on 26–28 Feb 1980 at the Fort Regent Pool, St Helier.

Treading water marathon

The duration record for treading water (vertical posture without touching the lane markers in an 8 ft 2.43 m square) is 2 hr 3 min by Albert Rizzo (b. 24 Sept 1947) in Malta on 25–26 Feb 1980.

TABLE TENNIS

Origins

The earliest evidence relating to a game resembling table tennis has been found in the catalogues of London sports goods manufacturers in the 1880s. The old Ping Pong Association was formed in 1902 but the game proved only a temporary craze and was resuscitated in 1921. The English Table Tennis Association was formed on 24 Apr 1927.

Most English titles

The highest total of English men's titles (instituted 1921) was won by G. Viktor Barna (1911–72) (b. Hungary, Gyöze Brann). The women's record is 17 by Diane Rowe (b. 14 Apr 1933), now Mrs Eberhard Scholer. Her twin Rosalind (now Mrs Cornelia) also won nine (two in singles).

The most titles won in the English Closed Championships were seven by Jill Patricia Hammersley (now Parker *née* Shirley) (b. 6 Dec 1951) in 1973–6, 1978–9, 1981.

Youngest international

The youngest ever international was Joy Foster, aged 8, when she represented Jamaica in the West Indies Championships at Port of Spain, Trinidad in Aug 1958. The youngest ever to play for England is Carl Prean, (b. 20 Aug 1957), aged 14 years 10 days, against Portugal at Lisbon on 27 Feb 1982.

Longest match

In the Swaythling Cup final match between Austria and Czechoslovakia in Prague, Czechoslovakia, in 1936, the play lasted for 11 days beginning on Sunday 15 March and completed on the following Wednesday.

Longest rally

In a Swaythling Cup match in Prague on 14 Mar 1936 between Alex Ehrlich (Poland) and Farcas Paneth (Romania) the longest rally lasted 1 hr 58 min. On 30 July 1978 Robert Sargent and Donald Peters staged an 8 hr 33 min rally at Stamford, Conn, USA.

Counter hitting

The record number of hits in 60 sec is 162 by English Internationals Nicky Jarvis (b. 7 Mar 1954) and Desmond Douglas (b. 20 July 1955) at the Eccentric Club, London on 1 Dec 1980.

MOST WINS IN WORLD CHAMPIONSHIPS (Instituted 1926-7)

Event	Name and Nationality	Times	Years
Men's Singles (St Bride's Vase)	G. Viktor Barna (Hungary) (1911-72)	5	1930, 1932-5
Women's Singles (G. Geist Prize)	Angelica Rozeanu (Romania) (b. 15 Oct 1921)	6	1950-5
Men's Doubles	G. Viktor Barna (Hungary)	8	1929-35, 1939
Women's Doubles	Maria Mednyanszky (Hungary) (1901-79)	7	1928, 1930-5
Mixed Doubles (Men)	Ferenc Sido (Hungary) (b. 1923)	4	1949-50, 1952-3
(Women)	Maria Mednyanszky (Hungary)	6	1927-8, 1930-1, 1933-4

G. Viktor Barna gained a personal total of 15 world titles, while 18 have been won by Maria Mednyanszky.

Note: With the staging of championships biennially the breaking of the above records would now be virtually impossible

MOST TEAM TITLES

Event	Team	Times	Years
Men's Team (Swaythling Cup)	Hungary	12	1927-31, 1933-5, 1938, 1949, 1952, 1979
Women's Team (Marcel Corbillion Cup)	Japan	8	1952, 1954, 1957, 1959, 1961, 1963, 1967, 1971

MOST WINS IN ENGLISH OPEN CHAMPIONSHIPS (Instituted 1921)

Event	Name and Nationality	Times	Years
Men's Singles	Richard Bergmann (Austria, then GB) (1920-70)	6	1939-40, 1948, 1950, 1952, 1954
Women's Singles	Maria Alexandru (Romania) (b. 1941)	6	1963-4, 1970-2, 1974
Men's Doubles	G. Viktor Barna (Hungary, then GB)	7	1931, 1933-5, 1938-9, 1949
Women's Doubles	Diane Rowe (GB) (now Scholer) (b. 14 Apr 1933)	12	1950-6, 1960, 1962-5
Mixed Doubles (Men)	G. Viktor Barna (Hungary, then GB)	8	1933-6, 1938, 1940, 1951, 1953
(Women)	Diane Rowe (GB) (now Scholer)	4	1952, 1954, 1956, 1960



Maria Mednyanszky of Hungary won a record 18 world table tennis championships, including the first five women's singles titles (1926-31).

This was equalled by Douglas and Paul Day (b. 20 Oct 1958) at Butlins, Blackpool, Lancs, on 21 Mar 1977. The most by women is 148 by Linda Howard and Melodi Ludi (now Hill) at Blackpool, Lancs, on 11 Oct 1977. With a bat in each hand, Gary D. Fisher of Olympia, Wash., USA, completed 5000 consecutive volleys over the net in 44 min 28 sec on 25 June 1979.

Highest speed

No conclusive measurements have been published but in a lecture M. Sklorz (W. Germany) stated that a smashed ball had been measured at speeds up to 170 km/h 105.6 mph.

Marathons

The longest marathon singles match is 132 hr 31 min by Danny Price and Randy Nunes at Cherry Hill, NJ, USA, on 20-26 Aug 1978.

The longest doubles marathon is 101 hr 1 min 11 sec by Lance, Phil and Mark Warren and Bill Weir at Sacramento, Calif., USA on 9-13 Apr 1979.

TENNIS (Real or Royal)**Origins**

The game originated as *jeu de paume* in French monasteries c. 1050. A tennis court is mentioned in the sale of the Hôtel de Nesle, Paris bought by King Philippe IV of France in 1308.

The oldest of the surviving active Tennis Courts in Great Britain is that at Falkland Palace, Fife, Scotland, built by King James V of Scotland in 1539. There are estimated to be 3000 players and 31 active courts throughout the world.

Most titles World

The first recorded World Tennis Champion was Clerge (France) c. 1740. Jacques Edmond Barre (France) (1802-73) held the title for a record 33 yr from 1829 to 1862. Pierre Etchebaster (1865-1980) a Basque, holds the record for the greatest number of successful defences of the title with eight between 1928 and 1952.

Most titles British

The Amateur Championship of the British Isles (instituted 1888) has been won 16 times by Howard Rea Angus (b. 22 June 1944) 1966-80 and 1982. Angus, a left-hander, is also the first British amateur to win a World title, in 1975.

TIDDLYWINKS

Origins

This game was only espoused by adults in 1955 when Cambridge University issued a challenge to Oxford.

National Championships

Alan Dean (Southampton) (b. 22 July 1949) has won the singles title a record five times, 1971–3, 1976, 1978. He has also won the pairs title three times. Jonathan Mapley (b. 1947) has won the pairs title a record four times, 1972, 1975, 1977 and 1980.

Guinness Trophy

England has remained unbeaten against Scotland, Ireland and Wales since the Trophy's inception on 7 May 1960. The closest result has been their 59½–52½ win over Wales at Warwick on 7 Apr 1968.

Speed records

The record for potting 24 winks from 18 in 45 cm is 21.8 sec by Stephen Williams (Altrincham Grammar School) in May 1966. Allen R. Astles (University of Wales) potted 10,000 winks in 3 hr 51 min 46 sec at Aberystwyth, Cardiganshire in February 1966.

Four pot relay

The greatest number of winks potted in 3 min by a relay of four is 29 by Paul Light, Paul Hoffman, Andrew James and Geoff Thorpe at 'The Castle', Cambridge on 6 Dec 1974.

Marathon

The longest game on record is 300 hr by six players from the Southampton University Tiddlywinks Club, Hampshire, on 20 Feb–5 March 1981.

TRACK AND FIELD ATHLETICS

See also The Guinness Book of Athletics Facts and Feats, by Peter Matthews, published by Guinness Superlatives Ltd (price £8.95) in August 1982.

Origins

Track and field athletics date from the ancient Olympic Games. The earliest accurately known Olympiad dates from July 776 BC, at which celebration Coroibos won the foot race. The oldest surviving measurements are a long jump of 7.05 m 23 ft 1½ in by Chionis of Sparta in c. 656 BC and a discus throw of 100 cubits (about 46.30 m 152 ft) by Protesilaus.

Earliest landmarks

The first time 10 sec ('even time') was bettered for 100 yd under championship conditions was when John Owen, then aged 30, recorded 9½ sec in the AAU Championship at Analostan Island, Washington, DC, USA, on 11 Oct 1890. The first recorded instance of 6 ft 1.83 m being cleared in the high jump was when Marshall Jones Brooks (1855–1944) jumped 6 ft 0½ in 1.832 m at Marston, near Oxford, on 17 Mar 1876. The breaking of the 'four-minute barrier' in the 1 mile 1609.34 m was first achieved by Dr (now Sir) Roger Gilbert Bannister, CBE (b. Harrow, London, 23 Mar 1929), when he recorded 3 min 59.4 sec on the Iffley Road track, Oxford, at 6.10 p.m. on 6 May 1954.

Fastest runner

Robert Lee Hayes (b. 20 Dec 1942) of Jacksonville, Florida, USA, may have reached a speed of about 27 mph 43.5 km/h during his then world record run of 9.1 sec in a 100 yd event at St Louis, Missouri, on 21 June 1963. Marlies Göhr (née Oelsner) (b. E. Germany, 21 Mar 1958) reached a speed of over 24 mph 38.6 km/h in her world record 100 m in 10.88 sec at Dresden, E. Germany on 1 July 1977.

Highest jumper above own head

The greatest height cleared above an athlete's own head is 23¼ in 59 cm by Franklin Jacobs (US) (b. 31 Dec 1957), who cleared 7 ft 7¼ in 2.32 m at New York, USA, on 27 Jan 1978.

He is only 5 ft 8 in 1.73 m tall. The greatest height cleared by a woman above her own head is 30.5 cm 12 in by Candy Holmes (USA) (b. 29 Aug 1960), 5 ft 1.525 m tall, who jumped 6 ft 1.83 m at Provo, Utah, USA on 1 June 1982.

Most Olympic titles Men

The most Olympic gold medals won is ten (an absolute Olympic record) by Ray C. Ewry (USA) (1874–1937) in the Standing High, Long and Triple Jumps in 1900, 1904, 1906 and 1920.

Most Olympic titles Women

The most gold medals won by a woman is four shared by Fanny 'Fanny' E. Blankers-Koen (Netherlands) (b. 26 Apr 1901) with 100 m, 200 m, 80 m hurdles and 4 × 100 m relay, 1936; Betty Cuthbert (Australia) (b. 20 Apr 1938) with 100 m, 200 m, 4 × 100 m relay, 1956 and 400 m, 1964, and Bärbel Wöckel (Eckert) (b. 21 Mar 1955) (E. Ger) with 200 m and 4 × 100 m relay in 1976 and 1980.

Most wins at one Games

The most gold medals at one celebration is five by Paavo Johannes Nurmi (Finland) (1897–1973) in 1924, and the most individual is four by Alvin C. Kraenzlein (USA) (1876–1955) in 1900, with 60 m, 110 m hurdles, 200 m hurdles and long jump.

Most Olympic titles British

The most gold medals won by a British athlete (excluding War and Walking, *q.v.*) is two by: Charles Bennett (1874–1950) (1500 m and 5000 m team, 1900); Alfred Tysoe (1874–1950) (800 m and 5000 m team, 1900); John Rimmer (1874–1950) (4000 m steeplechase; and 5000 m team, 1900); Albert Lewis (1889–1969) (800 m and 1500 m, 1920) and Douglas Galt (Arthur Lowe (1902–81) (800 m 1924 and 1928).

Most Olympic medals Men

The most medals won is 12 (nine gold and three silver) by Paavo Nurmi (Finland) in the Games of 1920, 1924 and 1928.

Most Olympic medals Women

The most medals won by a woman athlete is seven by Shirley La Hunty (née Strickland), MBE (Australia) (b. 18 July 1925) with three gold, one silver and three bronze in the 1948, 1952 and 1956 Games. A recently discovered photo-finish indicates she finished third, not fourth, in the 1948 200 metres event, unofficially increasing her medal haul to eight. Irena Szewińska (née Kirszenstein) (Poland) (b. 24 May 1946) won three gold, two silver and two bronze in 1964, 1968, 1972 and 1976, and is the only woman athlete to win a medal in four successive games.

Most Olympic medals British

The most medals won by a British athlete is four by Eric Butler (1899–1981) with a gold medal for the 4 × 400 m relay and a silver in the 400 m in 1920 and a bronze medal for each of these events in 1924. Two British women athletes have won three medals: Dorothy Hyman, MBE (b. 9 May 1941) with silver (100 m, 1960) and a bronze (200 m, 1960 and 4 × 100 m relay, 1964) and Mary Denise Rand, MBE (now Tomlinson) (Signal), (b. 10 Feb 1940) with a gold (long jump), a silver (javelin) and a bronze (4 × 100 m relay) all in 1964.

Olympic champions Oldest and youngest

The oldest athlete to win an Olympic title was Irish-born James J. 'Babe' McDonald (USA) (1878–1954) who was aged 40 years 26 days when he won the 56 lb 25.4 kg weight throw at Antwerp, Belgium on 21 Aug 1920. The oldest female champion was Manoliu (Romania) (b. 25 Apr 1932) aged 36 years 173 days when she won the discus at Mexico City on 18 Oct 1968. The youngest gold medallist was Barbara Jones (USA) (b. 20 Dec 1937) who was a member of the winning 4 × 100 m relay team aged 15 years 123 days, at Helsinki, Finland on 27 July 1952. The youngest male champion was Robert Bruce Mathias (USA) (b. 17 Nov 1930) aged 17 years 263 days when he won the long jump at London on 5–6 Aug 1948.

The oldest Olympic medallist was Tebbis Lloyd Johnson (USA) (b. 1 Apr 1900), aged 48 years 115 days when he was third in the 50,000 m walk. The oldest women's champion was Dina Averina (USSR) (b. 1904) aged 37 years 248 days when she was second in the 100 m in 1960.

World record breakers Oldest and youngest

For the greatest age at which anyone has broken a world record in a standard Olympic event see p. 240. The female record is 35 years 255 days in the case of Dana Zátopkova, *née* Ingrova (b. 19 Sept 1922) of Czechoslovakia, who broke the women's javelin record with 182 ft 10 in 55.73 m at Prague, Czechoslovakia, on 1 June 1958. The youngest individual record breaker is Carolina Gisolf (b. 13 July 1913) (Netherlands) who set a women's high jump mark with 1.61 m 5 ft 3 $\frac{3}{8}$ in at Maastricht, Netherlands on 18 July 1928, aged 15 years 5 days. The male record is 17 years 198 days by Thomas Ray (1862-1904) when he pole-vaulted 3.42 m 11 ft 2 $\frac{3}{4}$ in on 19 Sept 1879.

Most records in a day

Jesse Owens (1913-80) (USA) set six world records in 45 min at Ann Arbor, Michigan on 25 May 1935 with a 9.4 sec 100 yd at 3.15 p.m., a 26 ft 8 $\frac{1}{4}$ in 8.13 m long jump at 3.25 p.m., a 20.3 sec 220 yd (and 200 m) at 3.45 p.m. and a 22.6 sec 220 yd low hurdles (and 200 m) at 4.00 p.m.

Most national titles Great Britain

The greatest number of national AAA titles (excluding those in tug of war events) won by one athlete is 14 individual and one relay title by Emmanuel McDonald Bailey (b. Williamsville, Trinidad, 8 Dec 1920), between 1946 and 1952. The most won in a single event is 13 by Denis Horgan (Ireland) (1871-1922) in the shot put between 1893 and 1912. The greatest number of consecutive title wins is seven by Denis Horgan (shot put, 1893-99), Albert Arthur Cooper (1910-74) (2 miles walk, 1932-8), Donald Osborne Finlay, DFC, AFC (1909-70) (120 yd hurdles, 1932-8), Harry Whittle (b. 2 May 1922) (440 yd hurdles, 1947-53) and Maurice Herriott (b. 8 Oct 1939) (3000 m steeplechase, 1961-7).

The greatest number of WAAA titles won by one athlete is 14 by Suzanne Allday (*née* Farmer) (b. 26 Nov 1934) with seven each at shot and discus between 1952 and 1962. The record for consecutive WAAA titles is nine by Judy Undine Farr (Trowbridge & District AC) (b. 24 Jan 1942), who won the 1 $\frac{1}{2}$ mile 2414 m/2500 m 1 mile 974 yd walk from 1962 to 1970.

Most international appearances

The greatest number of international matches contested for any nation is 89 by Bjørn Bang Andersen for Norway.

The greatest number of full Great Britain international appearances (outdoors and indoors) is 70 by Verona Marolin Elder (*née* Bernard) (b. 5 Apr 1953) from 1971 to 1982. The men's record is 67 by Geoffrey Lewis Capes (b. 23 Aug 1949) between 1969 and 1980. The most outdoors is 61 by Andrew Howard Payne (b. South Africa, 17 Apr 1931) from 1960 to 1974.

Oldest and youngest internationals

The oldest full Great Britain international was Hector Harold Whitlock (b. 16 Dec 1903) at the 1952 Olympic Games, aged 48 years 218 days. The oldest woman was Christine Rosemary Payne (*née* Charters) (b. 19 May 1933) in the Great Britain v. Finland match on 26 Sept 1974, aged 41 yr 130 days. The youngest man was Ross Hepburn (b. 14 Oct 1961) v. the USSR on 26 Aug 1977, aged 15 years 316 days, and the youngest woman was Janis Walsh (b. 28 Mar 1960) v. Belgium (indoor) at 60 m and 4 x 200 m relay on 15 Feb 1975, aged 14 years 324 days.

Longest career

Duncan McLean (1884-1980) of Scotland set a world age-92—record of 100 m in 21.7 sec in August 1977, over 73 years after his best ever sprint of 100 yd in 9.9 sec in South Africa in February 1904. At Athens, Greece, on 10 Oct 1976, Dimitrion Yordanidis, aged 98, completed a marathon race in 7 hr 33 min.

Fastest 100 miles

On 15 Oct 1977 Donald A. Ritchie (b. 6 July 1944) (Birchfield H) ran 100 miles 160.9 km in a record 11 hr 30 min 51 sec at Crystal Palace, London. The best by a woman is 15 hr 44 min 27 sec by Marcy Schwam (USA) at Greenwich, Conn, USA on 1-2 Nov 1980.



Verona Elder has made the record number of British international appearances and the most by a woman for any country. She won three European indoor 400 m titles and at the Commonwealth Games won two individual silver and two relay gold medals. (George Herringshaw)

Fastest 100 kilometres

Donald Ritchie ran 100 km in a record 6 hr 10 min 20 sec at Crystal Palace, London on 28 Oct 1978. The women's best, run on the road, is 7 hr 27 min 22 sec by Chantal Langlace (b. 6 Jan 1955) (France) at Amiens, France on 6 Sept 1980.

Longest running race

The longest races ever staged were the 1928 (3422 miles 5507 km) and 1929 (3665 miles 5898 km) Trans-continental races from New York City, NY, to Los Angeles, California,

SPORTS, GAMES AND PASTIMES

USA. The Finnish-born Johnny Salo (1893–1931) was the winner in 1929 in 79 days, from 31 Mar to 18 June. His elapsed time of 525 hr 57 min 20 sec (averaging 6.97 mph 11.21 km/h) left him only 2 min 47 sec ahead of Englishman Pietro 'Peter' Gavuzzi (1905–81).

Longest runs

Ernst Mensen (Norway) (1799–1841), a former seaman in the British Navy is reputed to have run from Istanbul, Turkey, to Calcutta, India, and back in 59 days in 1836, averaging an improbable 100 miles 161 km per day. Max Telford (NZ) (b. Hawick, Scotland, 2 Feb 1935) ran 5110 miles 8224 km from Anchorage, Alaska to Halifax, Nova Scotia, in 106 days 18 hr 45 min from 25 July to 9 Nov 1977. The fastest time reported for the cross-America run is 46 days 8 hr 36 min by Frank Giannino Jr (USA) (b. 1952) for the 3100 miles 4989 km from San Francisco to New York on 1 Sept–17 Oct 1980.

Longest non-stop run

The greatest non-stop run recorded is 352.9 miles 568 km in 121 hr 54 min by Bertil Järlåker (Sweden) (b. 1936) at Norrköping, Sweden, 26–31 May 1980. He was moving for 95.04 per cent of the time.

Greatest mileage

Jay F. Helgeson (b. 3 Feb 1955) of Foster City, California, ran a certified marathon (26 miles 385 yd) or longer, each week for 52 weeks from 28 Jan 1979 to 19 Jan 1980, totalling 1418 racing miles 2282 km.

Track and Field

The greatest distance run in one year is 22,540 km by Tina Maria Stone (b. Naples, Italy, 1948) in Irvine, California, USA in 1981.

Douglas Alistair Gordon Pirie (b. 10 Feb 1931) set five world records in the 1950s, estimated that he had run a distance of 216,000 miles 347,600 km in 40 years to 1980.

Six-day races

The greatest distance covered by a man in six days between permissible hours between Sundays in Victorian times was 623¾ miles 1003,828 km by George Littlewood (England) required only 141 hr 57 min 30 sec for this feat on 27 Nov 1888 at the old Madison Square Garden, New York City.

24 hour record

The greatest distance run on a standard track in 24 hours is 974 yd 274,480 km by Dave Dowdle (Gloucestershire) (b. 1934) at Blackbridge, Gloucester on 22–23 May 1980. The best by a woman is 133 miles 939 yd 214,902 km by Catherine Fitzgerald (b. 9 Sept 1947) (Highgate Harriers) in the same year.

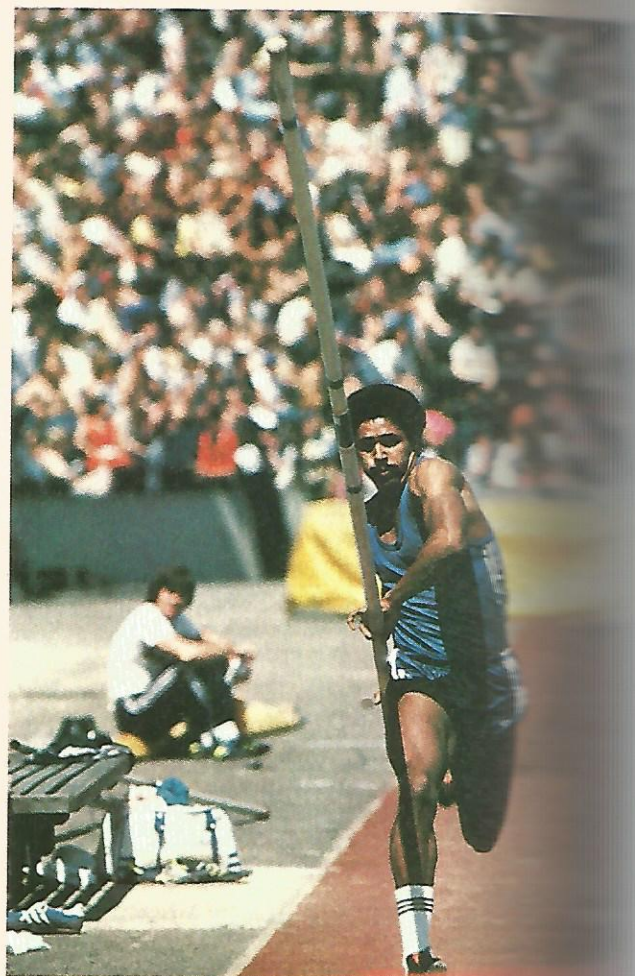
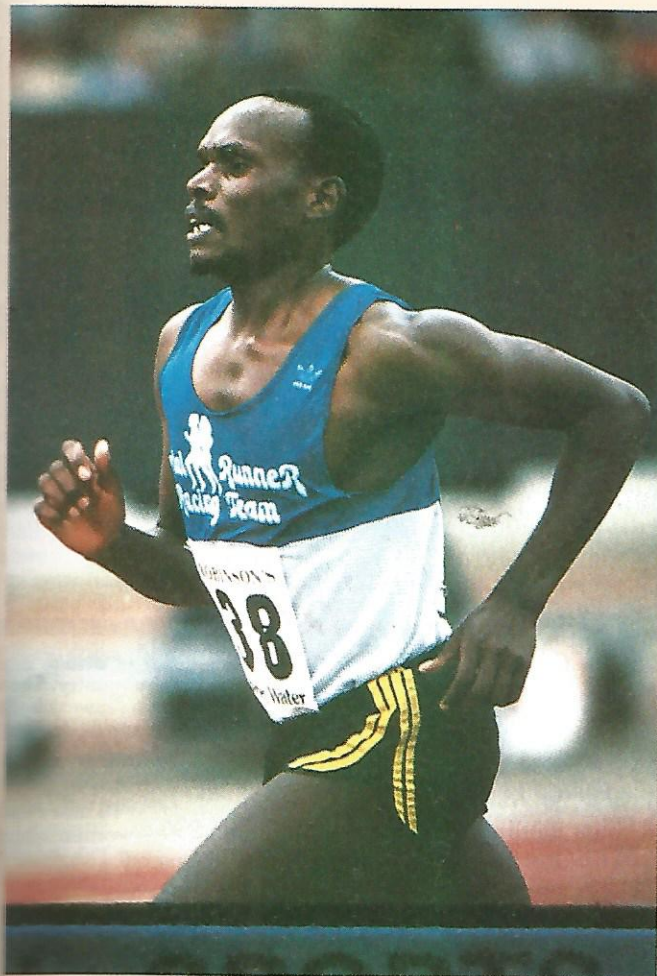
London to Brighton race

Ian Thompson (b. 16 Oct 1949) (Luton United Harriers) won the 100 miles 87,4 km race (inst. 1951) in 5 hr 15 min 15 sec in 1980, averaging 10.33 mph 16,62 km/h. The most wins by a man is by Bernard Gomersall (b. 28 Aug 1932) in 1963–4.

Mass relay records

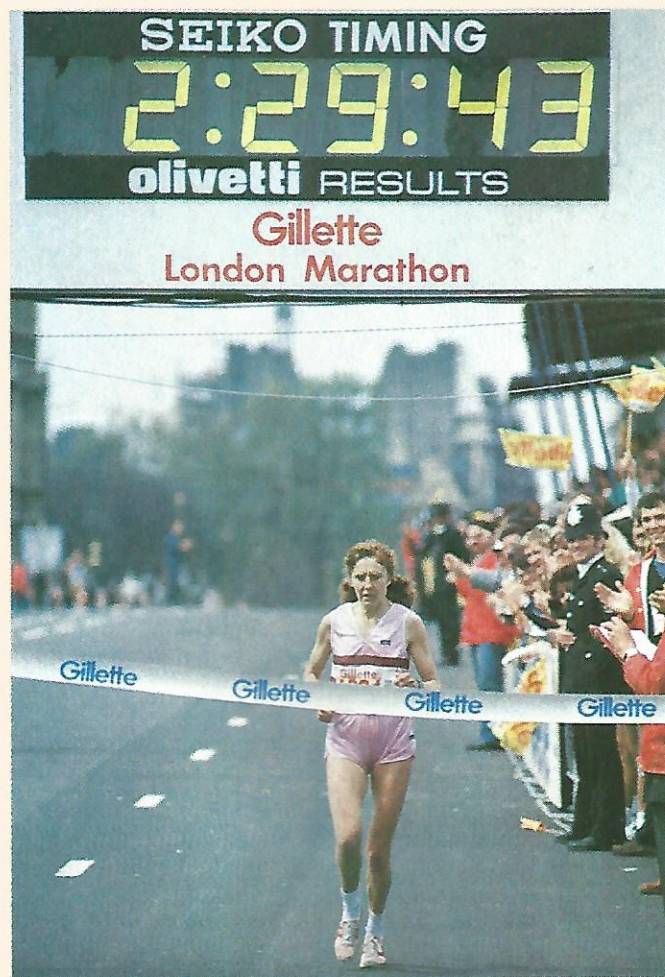
The record for 100 miles 160,9 km by 100 runners was set by the British team in 1980.

(left) Henry Rono set world records at four distance events in 1978, in which year he won Commonwealth gold medals at 5000 m and 10000 m. (Associated Sports Photography) (right) Daley Thompson has set two world decathlon records at Götzis in Austria in 1981 and then in 1982. Here he is pole vaulting at which his best is 5.20 m. (Tony Duffy, All-Sport)





(below) Joyce Smith sets her sixth British marathon best and wins her seventh marathon in ten races. At 44 years 195 days she was the oldest ever British athletics record holder. (Steve Powell, *All-Sport*)



(above) Renaldo Nehemiah set eleven world indoor sprint hurdles records in 1978-82 and was the first man to break 13 seconds for 110 metres hurdles, with a hand-timed 12.8 in 1979. Here he sets the current world record of 12.93 at Zurich in 1981. He signed as a pro footballer for the San Francisco 49ers in 1982. (Steve Powell, *All-Sport*)

one club is 7 hr 53 min 52.1 sec by Baltimore Road Runners Club, Towson, Maryland, USA, on 17 May 1981. The feminine record is held by a team from San Francisco Dolphins Southend Running Club, USA with 10 hr 47 min 9.3 sec on 3 Apr 1977. The best club time for a 100 × 400 metres relay is 1 hr 29 min 11.8 sec (average 53.5 sec) by the Physical Training Institute, Leuven, Belgium on 19 Apr 1978. The best women's club time for 100 × 100 metres is 23 min 28 sec by Amsterdamsche dames atletiekvereniging, on 26 Sept 1981 in Amsterdam, Netherlands.

Thirteen runners from the Melbourne Fire Brigade, Australia ran 6290 km 3908 miles in relay from Darwin, NT, to Melbourne, Victoria in 18 days 20 hr 25 min from 25 May-13 June 1979.

The longest relay ever run was of 7100 miles 11,426 km, 5504 laps of 1.29 miles 2.08 km by about 200 students from the Liverpool University Derby Hall of Residence on 16 Jan-22 Feb 1980. The most participants is 4550, 182 teams of 25, in the Batavierenrace, 160.7 km 99.85 miles from Nijmegen to Enschede, Netherlands, won by the University of Wales in 9 hr 24 min 44 sec on 24 Apr 1982.

Ambidextrous shot put

The best recorded distance is 121 ft 6¾ in by Allan Feuerbach (b. 14 Jan 1948) (USA) (left 51 ft 5 in 15.67 m, right 70 ft 1¾ in 21.38 m) at Malmö, Sweden on 24 Aug 1974.

Highland Games

The weight and height of cabers (Gaelic *cabar*) vary considerably. Extreme values are 25 ft 7.62 m and 280 lb 127 kg. The Braemar caber (19 ft 3 in 5.86 m and 120 lb 54.4 kg) in Grampian, Scotland, was untossed from 1891 until 1951 when it was tossed by George Clark. The best authentic mark recorded for throwing the 56 lb weight for height, using one hand only is 17 ft 5.18 m over a bar by Bishop Dolegiewicz (Canada) (b. 8 July 1953) at Great Gorge, New Jersey, USA on 19 Aug 1980. The best throw recorded for the Scots hammer is 151 ft 2 in 46.08 m



Ramona Neubert added 409 points to the world heptathlon record with a score of 6621 points in 1981. She improved to 6717 a week later and to 6772 in 1982. (Tony Duffy, All-Sport)

Track and Field Athletics

by William Anderson, MBE, (b. 6 Oct 1938) at Lochearnhead 26 July 1969.

Standing jumps

The best high jump is 6 ft 2¾ in 1,90 m by Rune Almen (Norway) Oct 1952) (Sweden) at Karlstad, Sweden on 3 May 1960. John Darby (1861–1937), the famous Victorian professional jumper (see also p. 182), long jumped a measured 12 ft 1½ in 3,68 m without weights at Dudley Castle, on 28 May 1890. Johan Christian Evandt (Norway) achieved 3,65 m 11 ft 11¾ in as an amateur in Reykjavik, Iceland on 11 Mar 1962.

The best high jump by a woman is 1,50 m 4 ft 11 in by Grete Bjørdalsbakke (b. 23 June 1960) (Norway) at Orsta, Norway 12 Dec 1979. The best long jump is 2,92 m 9 ft 7 in by Hans Mannes (Norway) at Flisa, Norway on 7 Mar 1981.

Highest one-legged jump

One-legged Arnie Boldt, (b. 1958) of Saskatchewan, Canada cleared 2.04 m 6 ft 8¼ in in Rome, Italy on 3 Apr 1981.

Oldest race

The oldest continuously held foot race is the 'Red Hose Race' held at Carnwath, Strathclyde, Scotland since 1508. The prize is a pair of hand-knitted knee length red hose. Michael Gilmour Bathgate, won a record 14 times, 1951–66.

WORLD RECORDS—MEN (as at 19 Aug 1982)

World records for the 32 men's events (excluding the walking records—see under WALKING) scheduled by the International Amateur Athletic Federation. Fully automatic electric timing is mandatory for the six events up to the 400 metre distance.

RUNNING	Min sec	Name and Country	Place	Date
100 metres	9.95	James Ray Hines (USA) (b. 10 Sept 1946)	Mexico City, Mexico	14 Oct 1968
200 metres	19.72	Pietro Mennea (Italy) (b. 28 June 1952)	Mexico City, Mexico	12 Sept 1971
400 metres	43.86	Lee Edward Evans (USA) (b. 25 Feb 1947)	Mexico City, Mexico	18 Oct 1968
800 metres	1:41.8	Sebastian Newbold Coe MBE (GB & NI) (b. 29 Sept 1956)	Florence, Italy	10 June 1976
1000 metres	2:12.18	Sebastian Newbold Coe MBE (GB & NI)	Oslo, Norway	11 July 1976
1500 metres	3:31.36	Steven Michael James Ovett MBE (GB & NI) (b. 9 Oct 1955)	Coblenz W. Germany	27 Aug 1976
1 mile	3:47.33	Sebastian Newbold Coe MBE (GB & NI)	Brussels, Belgium	28 Aug 1976
2000 metres	4:51.4	John George Walker, OBE (NZ) (b. 12 Jan 1952)	Oslo, Norway	30 June 1976
3000 metres	7:32.1	Henry Rono (Kenya) (b. 12 Feb 1952)	Oslo, Norway	27 June 1976
5000 metres	13:00.42	David Robert Moorcroft (GB & NI) (b. 10 Apr 1953)	Oslo, Norway	7 July 1976
10,000 metres	27:22.4	Henry Rono (Kenya)	Vienna, Austria	11 June 1976
20,000 metres	57:24.2	Josephus Hermens (Netherlands) (b. 8 Jan 1950)	Papendal, Netherlands	1 May 1976
30,000 metres	1 hr 13:55.8	Toshihiko Seko (Japan) (b. 15 July 1956)	Christchurch, New Zealand	22 Mar 1976
40,000 metres	1 hr 29:18.8	Toshihiko Seko (Japan)	Christchurch, New Zealand	22 Mar 1976
1 hour	20 944 m 13 miles 24 yd 2 ft	Josephus Hermens (Netherlands)	Papendal, Netherlands	1 May 1976
HURDLING				
110 metres (3' 6" 106 cm)	12.93	Renaldo Nehemiah (USA) (b. 24 Mar 1959)	Zürich, Switzerland	19 Aug 1968
400 metres (3' 0" 91.4 cm)	47.13	Edwin Corley Moses (USA) (b. 31 Aug 1955)	Milan, Italy	3 July 1968
1600 metres steeplechase	8:05.4	Henry Rono (Kenya)	Seattle, Washington, USA	13 May 1976
RELAYS				
4 x 100 metres (two turns)	38.03	United States National Team: (William Collins, Steven Earl Riddick, Clifford Wiley, Steven Williams)	Dusseldorf, W. Germany	3 Sept 1971
4 x 200 metres	1:20.26†	University of Southern California, USA: (Joel Andrews, James Sanford, William Mullins, Clancy Edwards)	Tempe, Arizona, USA	27 May 1978
4 x 400 metres	2:56.16	United States National Team: (Vincent Edward Matthews, Ronald J. Freeman, George Lawrence James, Lee Edward Evans)	Mexico City, Mexico	20 Oct 1968
4 x 800 metres	7:08.1	USSR: (Vladimir Podolyakov, Nikolay Kirov, Vladimir Malozemlin, Anatoliy Reshetnyak)	Podolsk, USSR	13 Aug 1968
4 x 1,500 metres	14:38.8	West Germany: (Thomas Wessinghage, Harald Hudak, Michael Lederer, Karl Fleschen)	Cologne, W. Germany	17 Aug 1977

† The time of 1:20.23 achieved by the Tobias Striders (Guy Abrahams, Mike Simmons, Donald O' Riley Quarrie, James Gilkes) at Tempe, Ariz., USA on 27 May 1978 was not ratified as the team was composed of varied nationalities.

FIELD EVENTS	ft in	m			
High Jump	7 8¾	2.36	Gerd Wessig (E. Germany) (b. 16 July 1959)	Moscow, USSR	1 Aug 1968
Pole Vault	19 0¾	5.81	Vladimir Polyakov (USSR) (b. 7 Apr 1960)	Tbilisi, USSR	26 June 1968
Long Jump	29 2½	8.90	Robert Beamon (USA) (b. 29 Aug 1946)	Mexico City, Mexico	18 Oct 1968
Shot Put	58 8½	17.89	João Carlos de Oliveira (Brazil) (b. 28 May 1954)	Mexico City, Mexico	15 Oct 1968
Discus 125 lb 15 lb	72 8	22.15‡	Udo Beyer (E. Germany) (b. 9 Aug 1955)	Gothenburg, Sweden	6 July 1976
Hammer 17.5 lb 16 lb	233 5	71.16†	Wolfgang Schmidt (E. Germany) (b. 16 Jan 1954)	East Berlin	9 Aug 1976
Weight 55 lb 28.22 oz	275 6	83.98	Sergey Litvinov (USSR) (b. 23 Jan 1958)	Moscow, USSR	3 June 1968
	317 4	96.72	Ferenc Paragi (Hungary) (b. 21 Aug 1953)	Tata, Hungary	23 Apr 1968

‡ Note: One professional performance is superior to the IAAF mark, but the same highly rigorous rules as to measuring and weighing were not necessarily applied.
75 0 22.86 Brian Ray Oldfield (USA) (b. 1 Jan 1945) El Paso, Texas, USA

† Ben Packard (USA) (b. 13 Apr 1953) threw 237 ft 4 in 72.34 m at Stockholm, Sweden on 7 July 1981 but was subsequently disqualified from competition.

DECATHLON

8723 points

Jürgen Hingsen (W. Germany) (b. 25 Jan 1958)
(1st day: 100 m 10.74 sec, Long Jump 7.85 m 25' 9 1/4",
Shot Put 16 m 52' 6", High Jump 2.15 m 6' 0 1/2",
400 m 47.65 sec)

Ulm, West Germany
(2nd day: 110 m hurdles 14.64 sec,
Discus 44.92 m 147' 4", Pole Vault 4.60 m 15' 1",
Javelin 63.10 m 207', 1500 m 4:15.13 sec)

WORLD RECORDS—WOMEN (as at 19 Aug 1982)

World records for the 22 women's events scheduled by the International Amateur Athletic Federation. The same stipulation about automatically timed events applies in the six events up to 400 metres as in the men's list.

RUNNING	Min sec	Name and Country	Place	Date
100 metres	10.88	Marlies Oelsner [now Göhr] (E. Germany) (b. 21 Mar 1958)	Dresden, E. Germany	1 July 1977
200 metres	21.71	Marlies Göhr (E. Germany)	Karl Marx Stadt, E. Germany	9 July 1980
400 metres	48.60	Marita Koch (E. Germany) (b. 18 Feb 1957)	Karl Marx Stadt, E. Germany	10 June 1979
800 metres	1:53.43	Marita Koch (E. Germany)	Turin, Italy	4 Aug 1979
1500 metres	3:52.47	Nadyezda Olizarenko [née Mushta] (USSR) (b. 28 Nov 1953)	Moscow, USSR	27 July 1980
1 mile	4:18.08†	Tatyana Kazankina (USSR) (b. 17 Dec 1951)	Zurich, Switzerland	13 Aug 1980
3000 metres	8:26.78	Mary Decker-Tabb (USA) (b. 4 Aug 1958)	Paris, France	9 July 1980
5000 metres	15:08.26	Svyetlana Ulmasova (USSR) (b. 4 Feb 1953)	Moscow, USSR	25 July 1980
10000 metres	31:35.3	Mary Decker-Tabb (USA)	Eugene, Oregon, USA	5 June 1982
		Mary Decker-Tabb (USA)	Eugene, Oregon, USA	16 July 1982

† Mary Decker ran 4:17.55 indoors at Houston, USA on 16 Feb 1980.

HURDLING

100 metres (2' 9" 84 cm)	12.36	Grazyna Rabsztyń (Poland) (b. 20 Sept 1952)	Warsaw, Poland	13 June 1980
400 metres (2' 6" 76 cm)	54.28	Karin Rossley (E. Germany) (b. 5 Apr 1957)	Jena, E. Germany	17 May 1980

RELAYS

4 × 100 metres	41.60	East Germany: (Romy Müller [née Schneider], Bärbel Wöckel [née Eckert], Ingrid Auerswald, Marlies Göhr [née Oelsner])	Moscow, USSR	1 Aug 1980
4 × 200 metres	1:28.15	East Germany: (Marlies Göhr [née Oelsner], Romy Müller [née Schneider], Bärbel Wöckel [née Eckert], Marita Koch)	Jena, E. Germany	9 Aug 1980
4 × 400 metres	3:19.23	East Germany: (Doris Maletzki, Brigitte Rohde, Ellen Streidt [née Stropahl], Christina Brehmer [now Lathan])	Montreal, Canada	31 July 1979
4 × 800 metres	7:52.3	USSR: (Tatyana Providokhina, Valentina Gerasimova, Svetlana Stykina, Tatyana Kazankina)	Podolsk, USSR	16 Aug 1979

FIELD EVENTS

	ft	in	m			
High Jump	6	7	2.01	Sara Simeoni (Italy) (b. 19 Apr 1953)	Brescia, Italy	4 Aug 1979
Long Jump	23	7 1/2	7.20	Valeria Ionescu (Romania) (b. 31 Aug 1960)	Bucharest, Romania	31 July 1980
Shot 4 kg 8 lb 13 oz	73	8	22.45†	Ilona Slupianek (E. Germany) (b. 24 Sept 1956)	Potsdam, E. Germany	11 May 1980
Discus 1 kg 2 lb 3.27 oz	235	7	71.80	Maria Petkova [née Vergova] (Bulgaria) (b. 3 Nov 1950)	Sofia, Bulgaria	13 July 1980
Javelin 600 g 21.16 oz	237	6	72.40	Tiina Lillak (Finland) (b. 15 Apr 1961)	Helsinki, Finland	26 July 1980

† Helena Fibingerová (Czechoslovakia) (b. 13 July 1949) set an indoor record of 22.50 m 73 ft 10 in at Jablonec, Cz. on 19 Feb 1977.

HEPTATHLON

6772 points

Ramona Neubert (E. Germany) (b. 26 July 1958)
(100 m hurdles 13.59 sec; Shot Put 15.10 m 49' 6 1/2"; High Jump
1.83 m 6' 0"; 200 m 23.14 sec; Long Jump 6.84 m 22' 5 1/4";
Javelin 42.54 m 139' 7"; 800 m 2 min 06.20 sec)

Halle, E. Germany

19–20 June 1980

The Marathon

The marathon distance of 26 miles 385 yd 42,195 km was standardised in 1924. There are no official records because of the varying severity of courses. The best recorded times are:

	Hr	min	sec			
MEN	2	8	13	Alberto Salazar (USA) (b. 7 Aug 1958)	New York, USA	25 Oct 1980
WOMEN	2	25	29	Allison Roe (NZ) (b. 30 May 1956)	New York, USA	25 Oct 1980
British records are:						
MEN	2	9	12	Ian Reginald Thompson (b. 16 Oct 1949)	Christchurch, New Zealand	31 Jan 1974
WOMEN	2	29	43	Joyce Esther Smith (b. 26 Oct 1937)	London	9 May 1982

UNITED KINGDOM (NATIONAL) RECORDS—MEN (as at 19 Aug 1982)

RUNNING	min sec	Name	Place	Date
100 metres	10.11	Allan Wipperfurth MBE (b. 3 May 1952)	Moscow, USSR	24 July 1980
200 metres (turn)	20.21	Allan Wipperfurth MBE	Moscow, USSR	25 July 1980
400 metres	44.93	David Andrew Jenkins (b. 25 May 1952)	Eugene, Oregon, USA	27 June 1981
800 metres	1:41.8	Sebastian Newbold Coe MBE (b. 29 Sept 1956)	Florence, Italy	10 June 1981
1000 metres	2:12.18	Sebastian Newbold Coe MBE	Oslo, Norway	11 June 1981
1500 metres	3:31.36	Steven Michael James Ovett MBE (b. 9 Oct 1955)	Coblenz, W. Germany	27 June 1981
1 mile	3:47.33	Sebastian Newbold Coe MBE	Brussels, Belgium	28 June 1981

1000 metres	4:57.71
5000 metres	7:32.79
10000 metres	13:00.42
15000 metres	27:30.3†
20000 metres	58:39.0
25000 metres	1 hr 15:22.6
30000 metres	1 hr 31:30.4
1 hour	12 miles 1268 yd 20 472 m

† Ratified at 27:30.6

Steven Michael James Oveit MBE
David Robert Moorcroft (b. 10 Apr 1953)
David Robert Moorcroft
Brendan Foster, MBE (b. 12 Jan 1948)
Ronald Hill (b. 25 Sept 1938)
Ronald Hill
James Noel Carroll Alder (b. 10 June 1940)
Ronald Hill

Oslo, Norway	7 July 1982
London (Crystal Palace)	17 July 1982
Oslo, Norway	7 July 1982
London (Crystal Palace)	23 June 1978
Leicester	9 Nov 1968
Bolton, Lancashire	21 July 1965
London (Crystal Palace)	5 Sept 1970
Leicester	9 Nov 1968

HURDLING

100 metres	13.68
400 metres	48.12
3000 metres Steeplechase	8:18.80

James Mark Holtom (b. 6 Feb 1958)
David Peter Hemery, MBE (b. 18 July 1944)
Colin Robert Reitz (b. 6 Apr 1960)

London (Crystal Palace)	9 June 1982
Mexico City, Mexico	15 Oct 1968
Stockholm, Sweden	6 July 1982

RELAYS

4 x 100 metres	38.62
4 x 200 metres	1:24.1
4 x 400 metres	3:00.46
4 x 800 metres	7:17.4†
4 x 1500 metres	14:56.8

United Kingdom: (Michael Anthony McFarlane, Allan Whipper Wells, Robert Cameron Sharp, Andrew Emyln McMaster)
Great Britain: (Brian William Green, Roger Wilfred Walters, Ralph Banthorpe, Martin Edward Reynolds)
United Kingdom: (Martin Edward Reynolds, Alan Peter Pascoe, MBE, David Peter Hemery, MBE, David Andrew Jenkins)
United Kingdom: (Martin Bilham, David Cropper, Michael John Maclean, Peter Miles Browne)
United Kingdom: (Alan David Mottershead, Geoffrey Michael Cooper, Stephen John Emson, Roy Wood)

Moscow, USSR	1 Aug 1980
Paris, France	2 Oct 1971
Munich, W. Germany	10 Sept 1972
London (Crystal Palace)	5 Sept 1970
Bourges, France	24 June 1979

† A time of 7:14.6 by a UK team (Graeme Grant, G. Michael Varah, Christopher Carter, John Peter Boulter) at Crystal Palace, London on 22 June 1966 was not ratified on a technicality.

FIELD EVENTS

	ft	in	m
High Jump	7	4 1/4	2.24
Pole Vault	18	6 1/2	5.65
Long Jump	27	0	8.23
Triple Jump	57	7 3/4	17.57
Shot 7.25 kg 16 lb	71	1 1/2	21.58
Discus 2 kg 4 lb 6.55 oz	212	1	64.64†
Hammer 7.25 kg 16 lb	246	0	74.98
Javelin 800 g 28.22 oz	280	7	85.52

Mark Naylor (b. 10 Sept 1957)
Keith Frank Stock (b. 18 Mar 1957)
Lynn Davies, MBE (b. 20 May 1942)
Keith Leroy Connor (b. 16 Sept 1957)
Geoffrey Lewis Capes (b. 23 Aug 1949)
Richard Charles Slaney (b. 16 May 1956)
Christopher Francis Black (b. 1 Jan 1950)
David Charles Otley (b. 5 Aug 1955)

Plymouth, Devon	28 June 1980
Oslo, Norway	7 July 1981
Bern, Switzerland	30 June 1968
Provo, Utah, USA	5 June 1982
Cwmbran, Gwent	18 May 1980
San Diego, Cal, USA	30 Apr 1982
Edinburgh, Scotland	21 Aug 1976
Isleworth, Middlesex	28 May 1980

† William Raymond Tancred (b. 6 Aug 1942) threw 64.94 m 213 ft 1 in at Loughborough on 21 July 1974 but this was not ratified.

DECATHLON (1962 Scoring Table)

8707 points

Francis Morgan 'Daley' Thompson (b. 30 July 1958)
(1st day: 100 m 10.49 sec, Long Jump 7.95 m 26' 1",
Shot Put 15.31 m 50' 2 3/4", High Jump 2.08 m 6' 9 3/4",
400 m 46.86 sec)

Götzis, Austria
(2nd day: 110 m Hurdles 14.31 sec,
Discus 44.34 m 145' 6", Pole Vault 4.90 m 16' 0 3/4",
Javelin 60.52 m 198' 7" 1500 m 4:30.55 sec)

22-23 May 1982

UNITED KINGDOM (NATIONAL) RECORDS—WOMEN (as at 19 Aug 1982)

RUNNING	Min sec	Name	Place	Date
100 metres	11.16	Andrea Joan Caron Lynch, MBE (b. 24 Nov 1952)	London (Crystal Palace)	11 June 1975
200 metres	22.31	Kathryn Jane Smallwood (b. 3 May 1960)	London (Crystal Palace)	8 Aug 1980
400 metres	50.63	Michelle Scutt [née Probert] (b. 17 June 1960)	Cwmbran, Gwent	31 May 1981
800 metres	1:59.05	Christina Tracy Boxer (b. 25 Mar 1957)	Turin, Italy	4 Sept 1979
1500 metres	4:01.53	Christine Mary Benning [née Tranter] (b. 30 Mar 1955)	Zurich, Switzerland	15 Aug 1979
1 mile	4:30.20	Christina Tracy Boxer	Gateshead, Tyne and Wear	8 July 1979
3000 metres	8:46.01	Wendy Smith (b. 5 Nov 1959)	Oslo, Norway	7 July 1982
5000 metres	15:14.51	Paula Fudge (b. 30 Mar 1952)	Knarvik, Norway	13 Sept 1981
10000 metres	32:57.17	Kathryn Mary Binns (b. 13 Jan 1958)	Sittard, Netherlands	14 Aug 1980
RELAYS				
4 x 100 metres	42.43	United Kingdom: (Heather Regina Hunte [now Oakes], Kathryn Jane Smallwood, Beverley Lanita Goddard [now Callender], Sonia May Lannan- man)	Moscow, USSR	1 Aug 1980
4 x 200 metres	1:31.57	United Kingdom: (Donna-Marie Louise Hartley [née Murray], Verona Marolin Elder [née Bernard], Sharon Colyear, Sonia May Lannaman)	London (Crystal Palace)	20 Aug 1977
4 x 400 metres	3:25.87	United Kingdom: (Linda Jane Forsyth, Joslyn Hoyte-Smith, Verona Marolin Elder, Michelle Scutt)	London (Crystal Palace)	19 June 1982
4 x 800 metres	8:23.8	Great Britain: (Joan Florence Allison [née Page], Sheila Janet Carey [née Taylor], Patricia Barbara Lowe [now Cropper], Rosemary Olivia Stirling [now Wright])	Paris, France	2 Oct 1971
HURDLING				
100 metres	13.06	Shirley Elaine Strong (b. 18 Nov 1958)	Stuttgart, W. Germany	11 July 1980
400 metres	56.06	Christine Anne Warden [née Howell] (b. 26 Dec 1950)	London (Crystal Palace)	28 July 1979

FIELD EVENTS

	ft	in	m
High Jump	6	4¾	1.95
Long Jump	22	2¼	6.76
Shot 4 kg 8 lb 13 oz	58	6½	17.84
Discus 1 kg 2 lb 3.27 oz	221	5	67.48
Javelin 600 g 21.16 oz	228	8	69.70

HEPTATHLON

6110 points

Diana Clare Elliott (b. 7 May 1961)
 Mary Denise Rand, mae [now Toomey, née Bignal] (b. 10 Feb 1940)
 Venissa Anne Head (b. 1 Sept 1956)
 Judith Miriam Oakes (b. 14 Feb 1958)
 Margaret Elizabeth Ritchie (b. 6 July 1952)
 Theresa Ione Sanderson (b. 14 Mar 1956)

Oslo, Norway
 Tokyo, Japan

Cwmbran, Gwent
 Cwmbran, Gwent
 Walnut, California, USA
 Stuttgart, W. Germany

Theresa Ione Sanderson
 (100 m hurdles 13.72 sec; Shot Put 12.78 m 41' 11¼";
 High Jump 1.63 m 5' 4¼"; Long Jump 5.97 m 19' 7";
 Javelin 64.64 m 212' 1"; 800 m 2.26.20 sec)

Brussels, Belgium

Backwards running

The fastest time for running 100 yd backwards is 13.1 sec by Paul Wilson (NZ) at Tokyo, Japan on 22 Sept 1979. He clocked 14.4 sec for 100 m. Ernest C. Conner Jr (b. 1944) ran the New York Marathon backwards in 5 hr 18 min on 26 Oct 1980.

Fastest blind sprinting

Graham Henry Salmon (b. 5 Sept 1952) of Loughton, Essex, England ran 100 m 109 yd in 11.4 sec at Grangemouth, Scotland on 2 Sept 1978.

Pancake race record

The annual Shrove Tuesday Housewives' Pancake Race at Olney, Buckinghamshire, was first mentioned in 1445. The record for the 415 yd 380 m course (three tosses mandatory) is 61.0 sec, by Sally Ann Faulkner, (b. 1958) on 26 Feb 1974. The record for the counterpart race (inst. 1949) at Liberal, Kansas, USA is 58.5 sec by Sheila Turner (b. 9 July 1953) on 11 Feb 1975.

Dale R. Lyons (b. 26 Feb 1937) (GB) has run several marathons during which he tosses a 2 oz 57 g pancake repeatedly en route in a 1½ lb 0.68 kg pan. His fastest time is 3 hr 9 min in the 1982 London Marathon.



Dale Lyons, known at the Birmingham College of Food as the 'Gallopig Gourmet', demonstrates his marathon pancake running prowess.

TRAMPOLINING

Origins

Trampolines were used in show business at least as early as 'The Walloons' of the period 1910-12. The sport of trampolining (from the Spanish word *trampolin*, a springboard) dates from 1936, when the prototype 'T' model trampoline was developed by George Nissen (USA).

Most titles

Four men have won a world title (instituted 1964) twice; Dave Jacobs (USA) in 1967-8, Wayne Miller (b. 1946) (USA), in 1966 and 1970, Richard Tison (France) in 1974 and 1976 (shared), and Evgeni Janes (USSR), 1976 (shared) and 1978. Judy Wills (b. 1948) (USA) won the first five women's titles (1964-8). Two European titles (1969 and 1971) have been won by Paul Luxon (b. 1952) (GB), the 1972 world champion. A record seven

United Kingdom titles have been won by Wendy Wright (1968-70, 1972-5, 1977). The most by a man have been five by Stewart Matthews (b. 19 Feb 1962) (1976-80).

Youngest international Great Britain

Andrea Holmes (b. 2 Jan 1970) competed for Britain at 12 years 131 days in the World Championships at Montana, USA on 13 May 1982.

Marathons

The longest trampoline bouncing marathon is one of 1248 hours (52 days) set by a team of six in Phoenix, Arizona, USA on 24 June to 15 Aug 1974. The solo record is 266 hr 9 min by Jeff Schwartz, 19 at Glenview, Illinois, USA on 14-25 Aug 1981.

TUG OF WAR

Origins

Though ancient China and Egypt have been suggested as the originators of the sport, it is known that neolithic flint miners in Norfolk, England practised 'rope-pulling'. The first rules were those framed by the New York AC in 1879. In 1958 the Tug-of-War Association was formed to administer Britain's 600 clubs.

Most Olympic medals

An Olympic event from 1908 to 1920, three men won two gold medals (1908 and 1920) (all also won a silver medal in 1912)—John James Shepherd (1884-1954), Frederick H. Humphreys (1878-1954) and Edwin A. Mills (1878-1946) (all GB).

Most titles

The Wood Treatment team (formerly the Bosley Farmers) of Cheshire, have represented England since 1964, winning two World and ten European Championships at 720 kg 1587 lb. They also won 20 consecutive AAA Catchweight Championships 1959-78. Hilary Brown (b. 13 Apr 1934) was in every team. Trevor Brian Thomas (b. 1943), of British Aircraft Corporation Club is the only holder of three winner's medals in the European Open club championships.

Longest pulls

The longest recorded pull (prior to the introduction of AAA rules) is one of 2 hr 41 min between 'H' Company and 'E' Company of the 2nd Battalion of the Sherwood Foresters (Derbyshire Regiment) at Jubbulpore, India, on 12 Aug 1889. 'H' Company won. The longest recorded pull under AAA Rules (in which lying on the ground or entrenching the feet is not permitted) is one of 11 min 23 sec for the first pull between the Isle of Oxney and St Claret's at Chertsey, Surrey on 26 May 1979. The record time for 'The Pull' (inst. 1898), across the Black River, between freshman and sophomore teams at Hope College, Holland, Mich, USA, is 3 hr 51 min on 23 Sept 1977, but the method of bracing the feet precludes the replacing of the preceding records.

VOLLEYBALL

Origins

The game was invented as *Minionette* in 1895 by William G. Morgan at the YMCA gymnasium at Holyoke, Massachusetts,

SPORTS, GAMES AND PASTIMES

USA. The International Volleyball Association was formed in Paris in April 1947. The Amateur (now English) Volleyball Association of Great Britain was formed in May 1955.

Most world titles

World Championships were instituted in 1949. The USSR has won five men's titles (1949, 1952, 1960, 1962 and 1978). The USSR won the women's championship in 1952, 1956, 1960 and 1970.

Most Olympic medals

The sport was introduced to the Olympic Games for both men and women in 1964. The only player to win four medals is Inna Ryskal (USSR) (b. 15 June 1944), who won silver medals in 1964 and 1976 and golds in 1968 and 1972. The record for men is held by Yuriy Poyarkov (USSR) (b. 10 Feb 1937) who won gold medals in 1964 and 1968 and a bronze in 1972.

Most internationals Great Britain

Nicholas Richard Keeley (b. 20 Dec 1947) made a record 124 international appearances for England from 1969 to April 1982. The women's record is 94 by Freda Bussey (b. 7 Oct 1950) for England, 1972-81.

Highest attendance

The record crowd is 60,000 for the 1952 world title matches in Moscow, USSR.

Marathon

The record by two teams of six is 75 hr 30 min by twelve players from Kinston, North Carolina, USA, on 31 Jan-3 Feb 1980.

WALKING

Most Olympic medals

Walking races have been included in the Olympic events since 1906 but walking matches have been known since 1589. The only walker to win three gold medals has been Ugo Frigerio (Italy) (1901-68) with the 3000 m and 10,000 m in 1920 and 1924. He also holds the record of most medals with four (having additionally won the bronze medal in the 50,000 m in 1932) which total is shared with Vladimir Golubnichiy (USSR) (b. 2 June 1936), who won gold medals for the 20,000 m in 1960 and 1968, the silver in 1972 and the bronze in 1964.

The best British performance has been two gold medals by George Edward Larnar (1875-1949) for the 3500 m and the 10 miles in 1908, but Ernest J. Webb (1872-1937) won three medals being twice 'walker up' to Larnar and finishing second in the 10,000 m in 1912.

Most titles

Four time Olympian, Ronald Owen Laird (b. 31 May 1938) of the New York AC, USA, won a total of 65 National titles from 1958 to 1976, plus four Canadian championships. The greatest number of UK National titles won by a British walker is 27 by Vincent Paul Nihill, MBE (b. 5 Sept 1939) from 1963 to 1975.

Longest race

The Paris-Colmar, until 1980 Strasbourg-Paris, event (inst. 1926 in the reverse direction), now of 513.5 km 319 miles is the world's longest annual race walk. The fastest performance is by Robert Pietquin (Belgium) (b. 1938) who walked 507 km 315 miles in the 1980 race in 60 hr 1 min 10 sec (deducting 4 hr compulsory stops). This represents an average speed of 8.45 km/h 5.25 mph. Gilbert Roger (France) (b. 1914) won six times (1949, 1953-4, 1956-8). The only Briton to have completed the course is Colin Young (b. 20 Jan 1935) (Essex Beagles) in 1971 averaging 7.46 km/h 4.63 mph, covering 520 km 323.1 miles in 73 hr 30 min.

Dumitru Dan (1890-1978) of Romania was the only man of 200 entrants to succeed in a contest in walking 100,000 km 62,137 miles organised by the Touring Club de France on 1 Apr 1910. He covered 96,000 km 59,651 miles up to 24 Mar 1916 so averaging 43.85 km 27.24 miles a day.

Volleyball/Walking/Water Polo

Longest walks

The first person reported to have 'walked round the world' is George Matthew Schilling (USA) from 3 Aug 1897 to 1904, but the first verified achievement was by David Kunst (b. 1939) (USA) from 10 June 1970 to 5 Oct 1974. Tomas Carlos Pereira (b. Argentine, 16 Nov 1942) spent ten years, 6 Apr 1968-8 Apr 1978, walking 29,825 miles 48,000 km around all five continents. Sean Eugene Maguire (b. USA 15 Sept 1956) walked 7327 miles 11791 km from the Yukon River, north of Livengood, Alaska, to Key West, Florida, USA, in 307 days, 6 June 1978-9 April 1979. The Trans-Canada (Halifax to Vancouver) record walk of 3764 miles 6057 km is 96 days by Clyde McRae, 23, from 1 May to 4 Aug 1973. John Lees, (b. 23 Feb 1945) of Brighton, East Sussex, England between 11 Apr and 3 June 1972, walked 2876 miles 4628 km across the USA from City Hall, Los Angeles to City Hall, New York City in 53 days 12 hr 15 min (average 53.746 miles 86,495 km a day). The longest continuous walk in Britain is one of 6824 miles 10 982 km, around the British coast by John N. Merrill, (b. 19 Aug 1943) from 3 Jan to 8 Nov 1978.

'End to end'

Ann Sayer (b. 16 Oct 1936) walked the 840 miles 1352 km from Land's End to John o' Groats in 13 days 17 hr 42 min on 20 Sept-3 Oct 1980. The Irish 'End to End' record over the 376 miles 605 km from Mizen Head, Cork to Malin Head, Donegal is 7 days 7 hr 5 min, set by Neil Christopher Phillips (b. 15 May 1961) on 10-17 Aug 1981.

London to Brighton

The record time for the 53 miles 85 km walk is 7 hr 35 min 12 sec by Donald James Thompson, MBE (b. 20 Jan 1933) on 14 Sept 1957. Richard Esmond Green (b. 22 Apr 1924) has completed the course a record 45 times from 1950 to 1980.

Longest non-stop walk

Tom Benson, 49, walked 357.78 miles 575.79 km in 6 days 3 hr 1 min at Preston, Lancashire on 29 May-4 June 1982. He was not permitted any stops for rest and was moving 98.16 per cent of the time.

24 hours

The best official performance for distance walked on a track in 24 hr is 133 miles 21 yd 214.06 km by Huw Nielson (GB) at Walton-on-Thames, Surrey, on 14-15 Oct 1960. The best by a woman is 197 km 122.5 miles by Annie van den Meer (Netherlands) at Rouen, France, on 2-3 May 1981 over a 1,185 km lap road course.

Walking backwards

The greatest ever exponent of reverse pedestrianism has been Plennie L. Wingo (b. 24 Jan 1895) then of Abilene, Texas, who completed his 8000 mile 12,875 km trans-continental walk from Santa Monica, California to Istanbul, Turkey, from 15 Apr 1931 to 24 Oct 1932. The longest distance recorded for walking backwards in 24 hr is 80.5 miles 129.55 km by Veikko Matias (b. 23 Apr 1941) of Kangasala, Finland, at Kankaapää Airfield, Niinisalo, Finland on 7-8 Oct 1978.

WATER POLO

Origins

Water Polo was developed in England as 'Water Soccer' in 1869 and first included in the Olympic Games in Paris in 1900.

Most Olympic titles

Hungary has won the Olympic tournament most often with six wins in 1932, 1936, 1952, 1956, 1964 and 1976. Great Britain won in 1900, 1908, 1912 and 1920.

Five players share the record of three gold medals: Britons, George Wilkinson (1879-1946) in 1900, 1908, 1912; Paulo 'Paul' Radmilovic (1886-1968), and Charles Sidney Smith (1879-1951) in 1908, 1912, 1920; and Hungarians Deszo Gyarmati (b. 23 Oct 1927) and György Kárpáti (b. 23 June 1935) in 1952, 1956, 1964. Gyarmati's wife (Eva Szekely) and daughter (Andrea) won gold and silver medals respectively in swimming. Paul Radmilovic also won a gold medal for the 4 x 200 m freestyle relay in 1908.

TRACK WALKING—WORLD RECORDS

The International Amateur Athletic Federation recognises men's records at 20km, 30km, 50km and 2 hours. This table also includes world bests for other standard distances

Event	Time hr min sec	Name, country and date of birth	Place	Date
MEN				
3 km	10 54.61	Carlo Mattioli (Italy) (23 Oct 1954)	Wien, Italy	6 Feb 1980
10 km	38 31.41	Werner Heyer (E. Germany) (14 Nov 1956)	East Berlin (Indoor)	12 Jan 1980
20 km	1 20 06.8	Daniel Bautista (Mexico) (4 Aug 1962)	Montreal, Canada	17 Oct 1979
30 km	2 06 54.0	Ralf Kowalsky (E. Germany) (25 Mar 1962)	East Berlin, E. Germany	28 Mar 1982
50 km	3 41 39.0	Raul Gonzalez (Mexico) (25 Feb 1962)	Nams, Norway	25 May 1979
1 hour	15 121 metres	Daniel Bautista (Mexico)	Montreal, Mexico	26 Mar 1980
2 hours	28 358 metres	Ralf Kowalsky (E. Germany)	East Berlin, E. Germany	28 Mar 1982
WOMEN				
3 km	13 02.17	Sally Pierson (Australia) (25 Jan 1965)	Melbourne, Australia	21 Feb 1982
5 km	22 14.0	Aleksandra Derzhinskaya (USSR) (b. 1960)	USSR	11 July 1982
10 km	46 42.6	Susan Cook (Australia) (25 Aug 1966)	Melbourne, Australia	23 May 1982

TRACK WALKING—BRITISH RECORDS

MEN				
3 km	11 44.68	Roger George Mills (11 Feb 1946)	London (Crystal Palace)	7 Aug 1981
10 km	41 13.62	Steven John Barry (25 Oct 1962)	London (Crystal Palace)	19 June 1982
20 km	1 26 22.0	Steven John Barry	Brighton, W. Sussex	28 June 1981
30 km	2 22 54.7	Dennis Jackson (25 June 1946)	Brighton, W. Sussex	28 June 1981
50 km	4 11 22.0	Robert William Dobson (4 Nov 1942)	Paris, France	10 Aug 1974
1 hour	13 987 metres	Steven John Barry	Brighton, W. Sussex	28 June 1981
2 hours	26 037 metres	Ronald Edward Mathew (25 May 1941)	Sheffield, Lancashire	31 July 1971
WOMEN				
3 km	13 25.2	Carol Joan Tyson (15 Dec 1957)	Göteborg, Sweden	6 July 1979
5 km	23 11.2	Carol Joan Tyson	Göteborg, Sweden	30 June 1979
10 km	48 11.0	Marion Fawkes (3 Dec 1946)	Gunnarå, Sweden	8 July 1979

ROAD WALKING—WORLD BEST PERFORMANCES

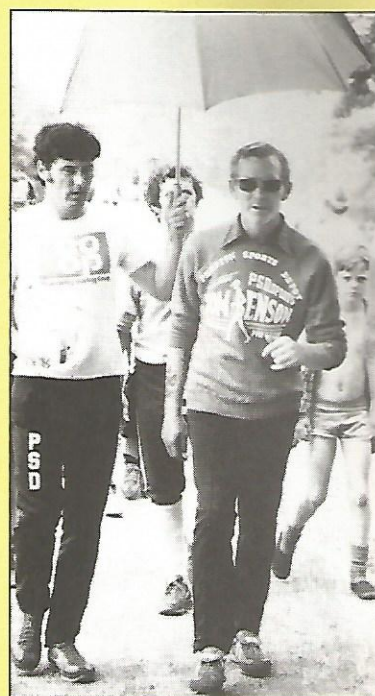
It should be noted that severity of road race courses and the accuracy of their measurement may vary, making comparisons of times unreliable

MEN				
20 km	1 18 49	Daniel Bautista (Mexico)	Easthorn, W. Germany	29 Sept 1979
30 km	2 03 06	Daniel Bautista (Mexico)	Cherkassy, USSR	27 Apr 1980
50 km	3 37 36*	Yevgeniy Kichinskiy (USSR) (27 Jan 1958)	Moscow, USSR	23 May 1980
	3 37 36*	Boris Yakovlev (USSR) (16 Jun 1945)	Moscow, USSR	23 May 1980
	3 41 19	Raul Gonzalez (Mexico)	Prague-Podebrady, Czechoslovakia	11 June 1978
WOMEN				
10 km	46 48	Susan Cook (Australia)	Moss, Australia	11 Feb 1980
20 km	1 39 31	Susan Cook (Australia)	Melbourne, Australia	20 Dec 1981
50 km	5 09 41	Lillian Miller (GB) (3 Mar 1945)	Sheffield, Lincs, England	18 July 1981

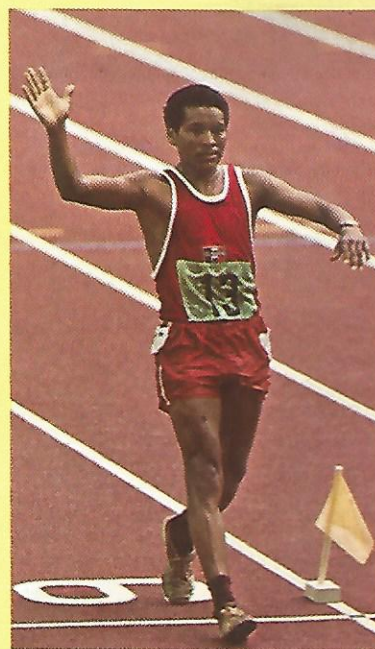
* questionable distance

ROAD WALKING—BRITISH BEST PERFORMANCES

MEN				
20 km	1 24 50	Vincent Paul West (3 Sept 1946)	Douglas, Isle of Man	30 July 1972
30 km	2 15 11	Steven John Barry	Douglas, Isle of Man	27 Feb 1982
50 km	4 05 14	Christopher Lloyd Mathew (25 Mar 1957)	Paris, France	13 Sept 1980
WOMEN				
10 km	48 47	Lillian Miller (10 Nov 1947)	York	20 June 1981
20 km	1 47 35	Lillian Miller	Southwick, W. Sussex	17 Apr 1982



(above) Five days of walking and one to go for Tom Benson round Moor Park, Preston in the longest ever non-stop walk. (Michael Hugh Scott)
(below) Walking nearly four times faster than Benson is multi-world record holder Daniel Bautista as he wins the 1976 Olympic 20 km title. (Colorsport)



ASA championships

The greatest number of Amateur Swimming Association titles is eleven, by Plaistow United SC from 1928 to 1954 and London Polytechnic from 1956 to 1978. The National League (formed 1963) has been won a record nine times by London Polytechnic.

Most goals

The greatest number of goals scored by an individual in a home international is eleven by Terry Charles Miller (b. 2 Mar 1932) (Plaistow United), when England defeated Wales 13-3 at Newport, Gwent, in 1951.

Most international appearances

The greatest number of international appearances is 412 by Alexei Barkalov (USSR) (b. 18 Feb 1946) from 1965-80. The British record is 126 by Martyn Thomas, of Cheltenham, 1964-78.

Marathon

Two teams of seven from Manly-Warringah Amateur Water Polo Club played for 24hr 10min at the Aquatic Centre, French's Forest, NSW, Australia on 3-4 Oct 1980.



Ana Maria Carasco the world women's water skiing record holder for tricks. (Steve Powell, *All-Sport*)

WATER SKIING

A specialist volume entitled *The Guinness Guide to Water Skiing* by David Nations, OBE and Kern Desmond has been published by Guinness Superlatives Ltd. (price £8.50).

Origins

The origins of water skiing lie in walking on planks and aquaplaning. A 19th century treatise on sorcerers refers to Eliseo of Tarentum who, in the 14th century, 'walks and dances' on the water. The first report of aquaplaning was on America's Pacific coast in the early 1900s. At Scarborough, Yorkshire, on 15 July 1914, a single plank-gliding contest was won by H. Storry.

The present day sport of water skiing was pioneered by Ralph W. Samuelson (1904-77) on Lake Pepin, Minnesota, USA, on two curved pine boards in the summer of 1922, though claims have been made for the birth of the sport on Lake Annecy (Haute Savoie), France at about the same time. The first world organisation, the Union Internationale de Ski Nautique, was formed in Geneva on 27 July 1946. The British Water Ski Federation was founded in London in 1954.

Most titles

World Overall championships (instituted 1949) have been won twice by Alfredo Mendoza (USA) in 1953 and 1955, Mike Szyderhoud (USA) in 1967 and 1969 and George Athans (Canada) in 1971 and 1973, and three times by Willa McGuire (née Worthington) of the USA in 1949-50 and 1955 and Elizabeth 'Liz' Allan-Shetter (USA) in 1965, 1969 and 1975. Liz Allan-Shetter has won a record eight individual championship events. The

Water Skiing/Weightlifting

USA has won the team championship on 13 successive occasions 1957-81. The most British Overall titles (instituted 1953) ever won by a man is six by Michael Hazelwood, MBE (b. Lincolnshire 14 Apr 1958) in 1974, 1976-9, 1981; the most by a woman is eight by Karen Jane Morse MBE (b. 1956) in 1971-6, 1978, 1981.

Jumping

The first recorded jump on water skis was made by Ralph Samuelson off a greased ramp, on Lake Pepin in 1925. The longest jump ever recorded is one of 60.20 m 196 ft 10 in by Michael Hazelwood MBE (GB) at Kirtons Farm, Reading, Berkshire on 2 Aug 1981. The women's record is 45.30 m 148.5 ft by Kathy Hulme (GB) (b. 11 Feb 1959) at Kirtons Farm on 1 Aug 1982 (not yet ratified).

Slalom and Tricks

The world record for slalom is 3 buoys on a 10.75 m 35 ft 3 in line at 58 km/h 36 mph by Bob LaPoint (USA) at McCormick Lake, Seffner, Florida on 21 Sept 1980. The record for women is 1½ buoys on a 11.25 m 37 ft line by Sue Fieldhouse (Australia) at Thorpe, Surrey, England on 5 Sept 1981. The tricks record is 9250 points by Cory Pickos (b. USA, 1964) at Kroonstad, South Africa on 27 Mar 1982 and at Seffner, Florida, USA on 24 Apr 1982. The women's record is 6970 points by Ana Maria Carrasco (Venezuela) at Berkeley, Cal, USA on 25 July 1981. The British men's record for tricks is 7700 by John Battleday (b. 1 Feb 1957) at Tallington Lakes, Lincolnshire on 23 May 1982. Mike Hazelwood had an unrated score of 7730 at Groveland, Florida on 5 July 1980. The women's record is 5280 by Philippa Roberts (b. 11 Apr 1960) at Holme Pierrepont, Nottingham on 18 July 1982.

Highest speed

The fastest water skiing speed recorded is 219.44 km/h 136.36 mph by Grant Michael Torrens (Australia) (b. 1957) on the Hawkesbury River, Windsor, New South Wales, Australia on 7 Mar 1982. His drag boat driver was Wayne John Jones. Donna Patterson Brice (b. 1953), set a feminine record of 178.81 km/h 111.11 mph at Long Beach, California on 21 Aug 1977. The fastest recorded speed by a British skier over a measured kilometre is 131.217 km/h 81.535 mph (average) on Lake Windermere, Cumbria on 18 Oct 1973 by Billy Rixon. The fastest by a British woman is 111.80 km/h 69.47 mph by Elizabeth Hobbs on Windermere, 19 Oct 1979.

Longest run

The greatest distance travelled is 1190 miles 1916 km by Helge Johansen (22) and Trond Georg Larsen (23) of Narvik, Norway, in the harbour, on 14-16 Aug 1980.

Barefoot

The first person to water ski barefoot is reported to be Dick Pope Jr at Lake Eloise, Florida, on 6 Mar 1947. The barefoot duration record is 2 hr 42 min 39 sec by Billy Nichols (USA) (b. 1964) on Lake Weir, Florida, on 19 Nov 1978. The backward barefoot record is 39 min by Paul McManus (Aust). The British duration record is 67 min 5 sec by John Doherty on 1 Oct 1974. The official barefoot speed record (two runs) is 177.06 km/h 110.02 mph by Lee Kirk (USA) at Firebird Lake, Phoenix, Ariz, on 11 June 1977. His fastest run was 182.93 km/h 113.67 mph. The fastest by a woman is 109.72 km/h 68.18 mph by Lorraine Dee Nelson (USA) (b. 23 Jan 1959) at Long Beach, California on 24 Aug 1980. Richard Mainwaring (GB) reached 114.86 km/h 71.37 mph at Holme Pierrepont, Nottinghamshire on 2 Dec 1978.

The best officially recorded barefoot jump is 17.20 m 56 ft 5 in by Peter Lindenberg (S. Africa) in Natal, on 27 Apr 1980.

WEIGHTLIFTING

Origins

Amateur weightlifting is of comparatively modern origin and the first 'world' championship was staged at the Café Monico, Piccadilly, London, on 28 Mar 1891. Prior to that time, weightlifting consisted of professional exhibitions in which some of the advertised poundages were open to doubt. The first to raise 400 lb 181 kg was Karl Swoboda (1882-1933) (Austria), in

Vienna, with 401¼ lb 182 kg in 1910, using the Continental clean and jerk style.

Most Olympic Medals

The winner of most Olympic medals is Norbert Schemmely (USA) (b. 30 May 1924) with four: Gold, middle-heavyweight 1952; Silver, heavyweight 1948; Bronze, heavyweight 1960 and 1964.

Most titles World

The most world title wins, including Olympic Games, weight by John Davis (USA) (b. 12 Jan 1921) in 1938, 1946-52; by Tommy Kono (USA) (b. 27 June 1930) in 1952-9; and by Vladimir Alexeyev (USSR) (b. 7 Jan 1942) 1970-7.

Most successful British lifter

The only British lifter to win an Olympic title has been Lunceston Elliot (1874-1930), the open one-handed lift champion in 1896 at Athens.

Louis George Martin, MBE (b. Jamaica, 11 Nov 1936) won four World and European mid-heavyweight titles in 1959, 1962-3, 1965. He won an Olympic silver medal in 1964 and a bronze in 1960 and also three Commonwealth gold medals in 1962, 1966, 1970. His total of British titles was 12.

Greatest lift

The greatest weight ever raised by a human being is 6270 lb 2844 kg (2.80 tons 2.84 tonnes) in a back lift (weight raised off trestles) by the 26-yr 165 kg Paul Anderson (USA) (b. 17 Oct 1932), the 1956 Olympic heavyweight champion, at Toccoa, Georgia, USA, on 12 June 1957. The greatest lift by a woman is 3564 lb 1616 kg with a hip and harness lift by Josephine Blatt (née Schauer) (1869-1923) at the Bijou Theatre, Hoboken, New Jersey, USA, on 15 Apr 1895.

Greatest overhead lifts

The greatest overhead lifts made from the ground are the clean and jerks achieved by super-heavyweights (see world record table). The greatest overhead lift ever made by a woman is 286 lb

129 kg in a continental jerk by Katie Sandwina (née Brumm-bach, later Mrs Max Heymann) (1884-1952) of Germany, in c. 1912. She stood 5 ft 11 in 1.80 m tall, weighed 210 lb 95 kg (95 kg) and is reputed to have unofficially lifted 312½ lb 140.747 kg and to have shouldered a cannon, which allegedly weighed 1200 lb 544 kg.

Greatest power lifts

Paul Anderson, as a professional, has bench-pressed 627 lb 284 kg and has achieved 1200 lb 544 kg in a squat so aggregating, with an 820 lb 371 kg dead lift, a career total of 2647 lb 1200 kg. Precious McKenzie (b. 6 June 1936) was the first to total 11 times his bodyweight (55 kg 121 lb) with 607.5 kg 1339 lb at Honolulu, Hawaii on 5 May 1979. Lamar Gant (USA) deadlifted five times his bodyweight (56 kg 123¼ lb) with 280 kg 617 lb at Dayton, Ohio on 2 Nov 1979. Mike Bridges (USA) is the first to hold the total records in three classes simultaneously on 8 Nov 1980. The newly instituted two-man deadlift record was raised to 1448 lb 656.8 kg by Clay and Doug Patterson in Arlington, Texas, USA, on 15 Dec 1979.

Hermann Görner (1891-1956) (Germany) performed a one-handed dead lift of 734½ lb 333.1 kg in Dresden on 20 July 1920. Peter B. Cortese (USA) achieved a one-armed dead lift of 370 lb 167 kg i.e. 22 lb 9.9 kg over triple his bodyweight at York, Pennsylvania on 4 Sept 1954. Görner also raised 24 men weighing 4123 lb 1870 kg on a plank on the soles of his feet in London on 12 Oct 1927 and carried on his back a 1444 lb 654 kg piano for 52½ ft 16 m at Leipzig on 3 June 1921.

The greatest power lift by a woman is a squat of 545½ lb 247 kg by Jan Suffolk Todd (b. 22 May 1952) (USA) (weighing 88.5 kg 195 lb) at Columbus, Georgia, USA in Jan 1981. The official record for the three-lift total is 1267 lb 574.5 kg by Bev Francis (Australia) (b. 15 Feb 1955) at Honolulu, Hawaii on 12 May 1981.

A deadlifting record of 4,702,646.25 lb 2 133 084.85 kg in 24 hr was set by a team of ten at the Darwin Weightlifting Club, Darwin, Lancs on 14-15 Aug 1981.

WORLD WEIGHTLIFTING RECORDS as at 19 August 1982

Bodyweight Class	Lift	kg	Lb	Name and Country	Place	Date
Flyweight (52 kg 114½ lb)	Snatch	114	251¼	Bronislaw Ryzhik (USSR)	Dnepropetrovsk, USSR	18 May 1982
	Jerk	142	313	Aleksandr Senyshin (USSR)	Dnepropetrovsk, USSR	18 May 1982
	Total	256.5	566½	Lubomir Khadjiev (Bulgaria)	Tatabanya, Hungary	1 June 1982
Bantamweight (56 kg 123¼ lb)	Snatch	126.5	278¾	Wu Shu-Teh (China)	Nagoya, Japan	16 Aug 1981
	Jerk	158	348¼	Oksen Mirzoyan (USSR)	Kazan, USSR	28 Oct 1981
	Total	277.5	611¾	Andreas Letz (E. Germany)	Meissen, E. Germany	10 Apr 1981
Featherweight (60 kg 132¼ lb)	Snatch	136	299¾	Daniel Nunez (Cuba)	Havana, Cuba	13 Aug 1982
	Jerk	170.5	374¾	Redzheb Redzhebov (Bulgaria)	Frunze, USSR	5 Mar 1982
	Total	302.5	666¾	Beloslav Manolov (Bulgaria)	Lille, France	14 Sept 1981
Welterweight (67.5 kg 148¾ lb)	Snatch	152.5	336	Daniel Nunez (Cuba)	Lille, France	14 Sept 1981
	Jerk	196	432	Joachim Kunz (E. Germany)	Meissen, E. Germany	2 Apr 1982
	Total	345	760½	Joachim Kunz (E. Germany)	Karl Marx Stadt, E. Germany	2 June 1981
Middleweight (75 kg 165¼ lb)	Snatch	162.5	358	Joachim Kunz (E. Germany)	Karl Marx Stadt, E. Germany	2 June 1981
	Jerk	206.5	455¼	Viktor Durnev (USSR)	Minsk, USSR	25 July 1982
	Total	369	793½	Yanko Rusev (Bulgaria)	Varna, Bulgaria	8 May 1982
Light-heavyweight (82.5 kg 181¾ lb)	Snatch	179	394½	Asen Zlatev (Bulgaria)	Moscow, USSR	24 July 1980
	Jerk	223.5	492½	Yanko Rusev (Bulgaria)	Lille, France	16 Sept 1981
	Total	400	881¾	Ismael Arsamakov (USSR)	Dnepropetrovsk, USSR	21 May 1982
Middle-heavyweight (90 kg 198¼ lb)	Snatch	190	418¾	Aleksandr Pervi (USSR)	Frunze, USSR	5 Mar 1982
	Jerk	228	502½	Yurik Vardanyan (USSR)	Moscow, USSR	26 July 1980
	Total	415	914¾	Yurik Vardanyan (USSR)	Dnepropetrovsk, USSR	21 May 1982
(100 kg 220½ lb)	Snatch	195	429¾	Yurik Vardanyan (USSR)	Dnepropetrovsk, USSR	21 May 1982
	Jerk	237.5	523½	Yuri Zakharevich (USSR)	Dnepropetrovsk, USSR	22 May 1982
	Total	430	947¾	Viktor Sots (USSR)	Dnepropetrovsk, USSR	22 May 1982
Heavyweight (110 kg 242½ lb)	Snatch	193	425	Yuri Zakharevich (USSR)	Dnepropetrovsk, USSR	22 May 1982
	Jerk	241	531¼	Leonid Taranenکو (USSR)	Donetsk, USSR	22 Dec 1981
	Total	427.5	942¼	Aleksandr Borissenok (USSR)	Dnepropetrovsk, USSR	23 May 1982
Super-heavyweight (Over 110 kg 242½ lb)	Snatch	202.5	446¼	Leonid Taranenکو (USSR)	Donetsk, USSR	22 Dec 1981
	Jerk	258.5	569¾	Anatoli Pisarenko (USSR)	Dnepropetrovsk, USSR	23 May 1982
	Total	457.5	1008½	Anatoli Pisarenko (USSR)	Dnepropetrovsk, USSR	23 May 1982



Barry Anderson, strandpulling Back Press Anyhow record holder.

Cue Levering

Traffic warden Jim Mills (b. 24 May 1923) levered 24 16 oz 453 g billiard cues simultaneously by their tips through 90 degrees to the horizontal, at Alfreton Park, Derbyshire, on 13 June 1982. Following this he levered a 22 oz 623 g cue 1005 times consecutively, by the same method.

Strandpulling

The International Steel Strandpullers' Association was founded by Gavin Pearson (Scotland) in 1940. The greatest ratified poundage to date is a super-heavyweight right arm push of 815 lb 369.5 kg by Malcolm Bartlett (b. 9 June 1955), of Oldham, Lancashire. He has also won a record 15 British Open titles. The record for the Back Press Anyhow is 645 lb 292.5 kg by Barry Anderson, of Leeds, in 1975.

Harry Sawyer (Ashford Common) set a world 12 st dislocation record of 353 lb 160 kg in 1972 aged 52 and David Hoar (Ossett, West Yorkshire) set a world 11 st right arm push record of 601 lb 272.5 kg aged 17.

WRESTLING

Origins

The earliest depictions of wrestling holds and falls on wall plaques and a statue indicate that organised wrestling dates from c. 2750–2600 BC. It was the most popular sport in the ancient Olympic Games and victors were recorded from 708 BC. The Greco-Roman style is of French origin and arose about 1860. The International Amateur Wrestling Federation (FILA) was founded in 1912.

Most titles Olympic

Three wrestlers have won three Olympic titles: Carl Westergren (1895–1958) (Sweden) in 1920, 1924, 1932; Ivar Johansson (1903–79) (Sweden) in 1932 (two), 1936; and Aleksandr Medved (b. 16 Sept 1937) (USSR) in 1964, 1968, 1972.

The only wrestler with more medals is Imre Polyák (Hungary) (b. 16 Apr 1932) who won the silver medal for the Greco-Roman featherweight class in 1952, 1956, 1960 and the gold in 1964.

Most titles World

The greatest number of world championships won by a wrestler is ten by the freestyler Aleksandr Medved (USSR) (b. 16 Sept 1937) with the light-heavyweight titles in 1962–4 (Olympic) and 1966, the heavyweight 1967–8 (Olympic), and the super-heavyweight in 1969–72 (Olympic). The only wrestler to win the same title in seven successive years has been Valeriy Rezzantsev (b. 2 Feb 1947) (USSR) in the Greco-Roman light-heavyweight class in 1970–6, including the Olympic Games of 1972 and 1976.

Most titles and longest span British

The most British titles won is ten by heavyweight Kenneth Alan Richmond (b. 10 July 1926) between 1949 and 1960. The longest span for BAWA titles is 24 years by George Mackenzie (1890–1957) who won his first in 1909 and his last in 1933. Mackenzie represented Great Britain in five successive Olympics from 1908 to 1928.

Most wins

In international competition, Osamu Watanabe (b. 21 Oct 1940), of Japan, the 1964 Olympic freestyle featherweight champion, was unbeaten and unscored-upon in 187 consecutive matches. Wade Schalles (USA) won 668 bouts from 1964 to 1980.

Longest bout

The longest recorded bout was one of 11 hr 40 min between Martin Klein (1885–1947) (Estonia representing Russia) and Alpo Asikainen (1888–1942) (Finland) for the Greco-Roman middleweight 'A' event silver medal in the 1912 Olympic Games in Stockholm, Sweden. It was won by Klein.

Heaviest heavyweight

The heaviest wrestler in Olympic history is Chris Taylor (1950–79), bronze medallist in the super-heavyweight class in 1972, who stood 6 ft 5 in 1.96 m and weighed over 420 lb 190 kg. The record for a British heavyweight champion is held by Archibald 'Archie' Dudgeon (1914–73) (Scotland), who won the 1936 BAWA heavyweight titles at 6 ft 2 in 1.88 m, 308 lb 139 kg.

CUMBERLAND AND WESTMORLAND WRESTLING

The British amateur championships were established in 1904. The only six time champions have been J. Baddeley (middleweight in 1905–6, 1908–10, 1912) and Ernest Aubrey Bacon (b. 1893) (lightweight in 1919, 1921–3, 1928–9).

PROFESSIONAL WRESTLING

Professional wrestling dates from 1874 in the USA. Georges Karl Julius Hackenschmidt (USSR) (1877–1968), Estonian-born, was undefeated at Greco-Roman contests from 1900 to his retirement in 1911. (See also p. 112).

SUMO WRESTLING

The sport's origins in Japan certainly date from c. 23 BC. The heaviest ever *sumotori* is Kazuhisa Shiki, *alias* Genkaiho (now named Rinho), who in 1981, at a height of 1.77 m 5 ft 9 in, attained 203 kg 447.6 lb. Weight is amassed by over alimentation with a high protein stew called *chankonabe*. The most successful wrestlers have been Sadaji Akiyoshi (b. 1912) *alias* Futabayama, winner of 69 consecutive bouts in the 1930s, Kake Naya (b. 1940) *alias* Taiho ('Great Bird'), who won the Emperor's Cup 32 times up to his retirement in 1971 and the *ozeki* Torokichi *alias* Raiden who in 21 years (1789–1810) won 254 bouts and lost only ten for the highest ever winning percentage of .962. The youngest of the 58 men to attain the rank of *Yokozuna* (Grand Champion) was Toshimitsu Ogata (b. 16 May 1953) *alias* Kitanoumi, in July 1974 aged 21 years and two months. He set a record in 1978 winning 82 of the 90 bouts that top *rikishi* fight annually. Hawaiian born Jesse Kuhaulua (b. 16 June 1944), now a Japanese citizen named Daigoro Watanabe, *alias* Takamiyama was the first non-Japanese to win an official tournament in July 1972 and in 1981 set a record of 1232 consecutive top division bouts.

YACHTING

The Guinness Book of Yachting Facts and Feats (£4.95) and The Guinness Guide to Sailing (£11.95), both by Peter Johnson, published by Guinness Superlatives Ltd provide more data on the sport.

Origins

Yachting in England dates from the £100 stake race between Charles II and his brother James, Duke of York, on the Thames on 1 Sept. 1661 over 23 miles from Greenwich to Gravesend. The oldest club in the world is the Royal Cork Yacht Club (formerly the Cork Harbour Water Club), established in Ireland in 1720. The oldest active club in Britain is the Starcross Yacht

Club at Powderham Point, Devon. Its first regatta was held in 1772. The word yacht is from the Dutch to hunt or chase.

Olympic titles World

The first sportsman ever to win individual gold medals in four successive Olympic Games was Paul B. Elvström (b. 24 Feb 1928) (Denmark) in the Firefly class in 1948 and the Finn class in 1952, 1956 and 1960. He has also won eight other world titles in a total of six classes. The lowest number of penalty points by the winner of any class in an Olympic regatta is three points (five wins, one disqualified and one second in seven starts) by *Superdocious* of the Flying Dutchman class (Lt. Rodney Stuart Pattison, MBE RN (b. 5 Aug 1943) and Iain Somerled Macdonald-Smith, MBE (b. 3 July 1945)) at Acapulco Bay, Mexico in October 1968.

Olympic titles British

The only British yacht to win two titles was *Scotia* in the Open class and Half-One Ton class at the 1900 Regatta with Lorne Campbell Currie (1871–1926), and John H. Gretton (1867–1947). The only British yachtsman to win in two Olympic regattas is Rodney Pattison in 1968 (see above) and again with *Superdoso* crewed by Christopher Davies (b. 29 June 1946) at Kiel, W. Germany in 1972. He gained a silver medal in 1976 with Julian Brooke Houghton (b. 16 Dec 1946).

Admiral's Cup

The ocean racing series with the most participating nations (three boats allowed to each nation) is the Admiral's Cup held by the Royal Ocean Racing Club. A record 19 nations competed in 1975, 1977 and 1979. To 1981, Britain had won the most times with eight wins.

America's Cup

The America's Cup was originally won as an outright prize by the schooner *America* on 22 Aug 1851 at Cowes and was later offered by the New York Yacht Club as a challenge trophy. On 8 Aug 1870 J. Ashbury's *Cambria* (GB) failed to capture the trophy from the *Magic*, owned by F. Osgood (USA). Since then the Cup has been challenged by Great Britain in 16 contests, in 2 contests by Canada, and by Australia six times, but the United States have never been defeated winning 77 races and only losing eight. The closest race ever was the fourth race of the 1962 series, when the 12 metre sloop *Weatherly* beat her Australian challenger *Gretel* by about three and a half lengths, a margin of only 26 sec, on 22 Sept 1962. The fastest time ever recorded by a 12 metre boat for the triangular course of 24.3 sea miles is 2 hr 46 min 58 sec by *Gretel* in 1962.

Longest race

The longest regular sailing race is the quadrennial Whitbread Round the World race (inst. Aug 1973) organized by the Royal Naval Sailing Association. The distance is 26,180 nautical miles from Portsmouth, and return with stops and re-starts at Cape Town, Auckland and Mar del Plata. The record (sailing) time is 120 days 6 hr 35 min by *Flyer* crewed by Cornelius van Rietschoten (Netherlands), finishing on 29 Mar 1982 (see also pp. 177–8).

24 Hour Dinghy Race

The greatest distance covered in the West Lancashire Y.C. 24 hr race is 158.8 statute miles by an *Enterprise* from the Tynemouth Sailing Club on 13–14 Sept 1980. The Betio Boating Community sailed an *Osprey*, *Tamaroa*, 171.5 statute miles at Tarawa, Gilbert Islands, on 24–25 Sept 1977.

Highest speeds

The official world sailing speed record is 36.04 knots (41.50 mph 66.78 km/h) by the 73½ ft 22,40 m proa *Crossbow II* over a 500 m 547 yd course in Portland Harbour, Dorset, on 17 Nov 1980. The vessel (sail area 1400 ft² 130,06 m²) was designed by Rod McAlpine-Downie and owned and steered by Timothy Colman. In an unsuccessful attempt on the record in October 1978, *Crossbow II* is reported to have momentarily attained a speed of 45 knots (51 mph 83 km/h).

The fastest 24 hr single-handed run by a sailing yacht was recorded by Nick Keig (b. 13 June 1936), of the Isle of Man, who covered 340 nautical miles in a 37½ ft 11,43 m trimaran *Three Legs of Mann I* during the Falmouth to Ponta, Azores race on 9–10 June 1975, averaging 14.16 knots (16.30 mph

26,23 km/h). The fastest bursts of speed reached were about 25 knots (28.78 mph 46,32 km/h).

Most successful yacht

The most successful racing yacht in history was the Royal Yacht *Britannia* (1893–1935), owned by King Edward VII, when Prince of Wales and subsequently by King George V, which won 231 races in 625 starts.

Marinas, Largest

The largest marina in the world is that of Marina Del Rey, Los Angeles, California, USA, which has 7500 berths. The largest in Britain is the Brighton Marina, East Sussex, with 2313 berths.

Most competitors

The most competitors ever to start in a single race was 1261 sailing boats in the Round Zealand (Denmark) race in June 1976, over a course of 375 km 233 miles. The greatest number to start in a race in Britain was 1055 keeled yachts and multihulls on 27 June 1981 from Cowes in the Annual Round-the-Island race. The fastest time achieved in this annual event is 4 hr 47 min 8 sec by the trimaran *Exmouth Challenger*, owned and sailed by Mark Gatehouse, on 19 June 1982.

Highest

The greatest altitude at which sailing has taken place is 16,109 ft 4910 m on Laguna Huallatani, Bolivia, in Mirror Dinghy 55448, variously by Peter Williams, Gordon Siddeley, Keith Robinson and Brian Barrett, on 19 Nov 1977.

BOARDSAILING

Origins

The High Court ruled on 7 Apr 1982 that Peter Chilvers (when aged 12) had devised a prototype of a boardsailer in 1958 in England. In 1968 Henry Hoyle Schweitzer and Jim Drake pioneered the sport, often termed windsurfing, in California, USA.

Highest speed

The record speed for boardsailing, is 24.63 knots (28.36 mph 45,64 km/h) by Jaap van der Rest (Netherlands) at Maalaea Bay, Maui, Hawaii on 18 July 1980.

English Channel

The record time for boardsailing across the English Channel is 1 hr 4 min 33 sec by Arnaud de Rosnay (France) in July 1982 at an average speed of 16.9 knots (19.5 mph 31,3 km/h).

Jaap van der Rest used winds averaging 20–24 knots for his world boardsailing speed record. (*Ten Cate Sports*)



STOP PRESS

CHAPTER 1

- Front End paper.** No 35. After 72 in, insert 183 cm
- Tallest Twins UK** (p 11). Jonathan and Mark Carratt of Maltby, S. Yorks (b. 11 June 1955) are 6 ft 8 in 203,2 cm and 6 ft 9 in 205,7 cm respectively.
- Oldest Man** (pp 16-17). It was solemnly announced on 29 July 1982 that one of China's 5,000,000 census enumerators had unearthed in the Guangxi Region, Lan Buping, whose birthdate he entered as 13 Apr 1848.
- Heaviest Baby** (p 19). A boy was delivered by caesarian section at Sipetu Hospital, Transkei, South Africa on 24 May 1982 weighing 10,2 kg 22 lb 8 oz.
- Human Salamanders** (p 24). Thirty five people from the Sawau tribe on the island of Beqa participated in a firewalk with the temperature over 1000°F 537°C on 18 May 1982 in the Fijian Islands.
- g Forces** (p 34). A land diver of Pentecost Island dived from a platform 81 ft 3 in 24,76 m high on 15 May 1982. The body speed was 50 ft per sec. The force was in excess of 110 g.

CHAPTER 2

- Mammals Rarest** (p 28). In July 1982 fifteen oryx, including two calves born in Oman, were reported awaiting release into the wild.
- Dogs Rarest** (pp 35-6). 'Iskur' died on 20 Apr 1982, since when two of the four remaining bitches have been put to sleep.
- Dogs Most Valuable** (p 36). On 28 June 1980 Mr. Alf McLean, a Belfast bookmaker, reportedly paid more than £40,000 for 'Indian Joe', winner of the 50th Greyhound Derby at White City Stadium London. The dog, owned by Mr. Kevin Frost of Co. Clare, Eire, was whelped in Sept 1977.
- Heaviest Cat** (p 37). On 23 June 1982 a weight of 20,7 kg 45 lb 10 oz (neck 15 in 38,1 cm, waist 32 in 81,28 cm, length 38 in 96,52 cm) was recorded for a six-year-old male tabby named 'Himmy' owned by Mr. Thomas Vyse of Redlynch, Cairns, Queensland, Australia.
- Starfishes Smallest** (p 45). The smallest known starfish is now the recently described *Asterina phylactica*, which does not exceed 15 mm 0.58 in in diameter. It is found in the Adriatic and the Mediterranean as well as the waters off south-western Britain.
- Gastropods Largest** (p 49). Pisor bought the shell from a fisherman in Kaohsiung, Taiwan in November 1979.
- Giant Plants** (p 55). Cucumber (footnote): A 17 lb 4 oz 7,82 kg example was grown by Nadine Williams of Knott, Texas, USA in 1982.
- Dahlia. An 11 ft 10 in 3,60 m example was grown by F. Wentzel of Fort Victoria, Zimbabwe in 1982.
- Kale (footnote). F. Doven of Mt. Lawley, Western Australia grew a kale measuring 3,90 m 12 ft 9 1/2 in in 1982.
- Broad Bean. Mrs. M. Adrian of Irvine, Ayrshire equalled the British record in 1981.
- Longest Avenue of Trees** (p 58). The longest avenue of trees has been the now partly felled private avenue of 1750 beeches in Savernake Forest. It measured 3.25 miles 5,23 km.

CHAPTER 3

- Worst Earthquake UK** (p 61). 9th line: For 6 read 5.2.
- Freshwater Island** (p 68). 1st line. For 13,500 miles² 35 000 km² read 18,500 miles² 48 000 km².
- Deepest Depression** (p 68). The bed rock in the Bentley sub-glacial trench, Antarctica is 2538 m 8326 ft below sea level.
- Deepest Cave** (p 68). Gouffre Jean Bernard with Aven B21 forms the Réseau de Foillis.
- Highest Waterfall** (p 71). 2nd Paragraph. For 1982 read 1981.

CHAPTER 4

- Largest Star** (p 76). R136a is estimated to have a radius 100 times greater than the Sun.
- Smallest Star** (p 76). The Royal Observatory, Edinburgh discovered that the mass of RG 0050-2722, 75 light years distant in Sculptor, is only 0.025 of the solar mass and the radius 1/100th part.
- Most Distant Object** (p 77). Dr. Bruce Peterson of Mount Stromlo Observatory, Australia who measured the record red-shift of the quasar Pks 2000-330 attributes to it a recession speed of 91.6 per cent and a distance of 7.91×10^9 light years.
- Most and Least Luminous** (p 77). R136a (see above) is estimated to have a luminosity 100 million times greater than the Sun. RG 0050-2722 (see above) also has an estimated luminosity of one millionth of the Sun.
- Highest Pay Load** (p 79). On 29 July 1982 after 4 years 10 months in space, the Salyut 6 space station was directed into the atmosphere and burnt up over the Pacific. It has been replaced by Salyut 7.
- Longest Manned Space Flight** (p 79). The estimated distance travelled was 129.1 million km 76,490,000 miles.

Astronauts (p 79). Svetlana Savitskaya (USSR) became the second woman and 109th human in space on 19 Aug 1982.

CHAPTER 5

- Highest Expansion (solid)** (p 81). For 248.59°C read -248.59°C.
- Champagne Cork Flight** (p 83). On 4 July 1981, Peter Kirby 'popped' a champagne cork a distance of 105 ft 9 in 32,23 m at Idlewild Park, Reno, Nevada, USA.
- Time Measure Shortest** (p 85). A pulse of laser light lasting only 30 femtoseconds (3×10^{-14} of a second) was generated at Bell Laboratories, Holmdel, N.J., USA, in April 1982. It was 9 micrometres long of about 14 wave-lengths.
- Cubism** (p 85). Minh Thai, 16, a Vietnamese refugee won the World Rubik Cube Championship held in Budapest, Hungary on 5 June 1982. His winning time was 22.95 sec.

CHAPTER 6

- World's Largest Poster** (p 89). A 1 metre tall poster 283,35 m 929 ft 7 1/2 in in length was exhibited at the University of Lund Carnival, Sweden, on 21-23 May 1982. The team was led by Mats Norell.
- World's Largest Mural** (p 91). The largest ground painting was completed by the Ottawa High School Art Dept., Canada on 27 Mar 1982 with an area of 142,000 ft² 13 192 m² at the Hillcrest Drive-in Theater, Ottawa.
- Most Massive Mobile** (p 92). Alexander Calder died in 1976.
- Longest German Word** (p 93). 29th letter. For 'c' read 'z'.
- Longest Palindromes** (p 94). By July 1982 Edward Benbow had extended his palindrome to 44,444 words. It starts 'Eva, can Ida hide warts?' ... and ends ... 'Straw, Ed, I had in a cave'.
- Longest Scientific Name** (p 94). The systematic name for Deoxyribonucleic acid of the human mitochondria, which contains 16,569 nucleotide residues is c. 207,000 letters long. It was published in key form in *Nature* on 9 Apr 1981.
- Longest Diary** (p 97). Mrs. P. Joyce Evans has completed 76 years of diary entries.
- Advance Sales** (p 107). The UK record for advance sales of an LP is 1,000,000 for the Epic album *Super Trouper* by Abba released in November 1980.
- Highest Box Office Gross** (p 108). *Star Trek II* grossed a record \$14,347,221 (then £7,970,680) in 1621 theatres on its opening weekend from 4-6 June 1982. The greatest opening month (25 days) was \$86.9 million (then £48.27 million) for Steven Spielberg's *ET; The Extra-Terrestrial* in 1323 theatres starting on 11 June 1982.
- Largest Loss** (p 108). For Heaven Gate, read Heaven's Gate.
- Cinema Seats** (p 110). Ascension Island has a record 733 cinema seats for a population of 971 (31 Dec 1981).
- Most Durable Actress** (p 111). Marion Seldes played Myra Bruhle in *Death-trap* on Broadway, New York in all 1809 performances from 26 Feb 1978 - 27 June 1982.
- Longest Continuous Radio Broadcast World** (p 112). Bruce Smith's broadcast was on 1-17 Feb 1982. The absolute record for continuous broadcasting is held by Larry Norton of WGRQ FM Buffalo, New York, USA, at 484 hr (equivalent to 20 days, 4 hr) from 19 Mar-8 Apr 1981. For 'these categories', read 'this category'.
- Most Durable Programmes BBC** (p 113). Up to August 1982 the signature tune *Barwick Green* had been played over 33,400 times.
- Highest TV Advertising Rates** (p 114). The highest TV advertising rate has been \$690,000 per min (then £6390 per sec) during NBC's *Superbowl* on 24 Jan 1982.
- Thinnest Set** (p 114). Last line. For 0.19 in read 1.9 in.

CHAPTER 7

- Caption** (p 116). The caption for the top photograph is incorrect. It should read: Asia's tallest building, the 240 m 787.4 ft Sunshine 60 in Ikebukuro, Tokyo, Japan.
- Most Expensive Hotel** (p 120). 2nd line. For Françoise read François.
- Most Expensive House** (p 120). The Kenstead Hall with the adjoining Beechwood property, The Bishop's Avenue, Hampstead, London, residence of the late king of Saudi Arabia was put on the market for £16 million in August 1982.
- Commonest Pub Name** (p 122). John Blackwell (now of Poole, Dorset) has recorded over 5000 different names.
- Longest Dams** (p 125). The revised estimate of the length of the 41 m 134.5 ft high Yacyreta-Apipe dam is 72 km 44.7 miles.
- Largest Construction Project** (p 128). The Madinat Al-Jubail Al-Sinaiyah project (1976-1996) covering 230,412.8 acres 932,43 km² is the largest in history. The work force on the city and industrial port complex will

increase to a peak of 35,387 from the mid-1982 figure of 17,200. The total earth moving and dredging volume will reach 345 million m³ or 0.82 of a cubic mile.

Earthworks Largest Great Britain (p 128). 6th line. For Dorset Curses, read Dorset Curses.

Deepest Boring World (p 132). The target has been revised to 13 000 m 42,650 ft, announced in April 1982.

Gold Mine UK (p 133). For Clogau read Clogau, St. David's, Gwynedd, Wales.

CHAPTER 8

Largest Barges (p 135). 1st line. For barge read barges. For 'is' read 'are'.

Light Vessels (p 136). The earliest station still marked by a light vessel is the Newarp in the North Sea, off Great Yarmouth established in 1791. A Nore Lightvessel was first placed in the Thames estuary in 1732.

Longest Car (p 138). In 1981 a 9 month long conversion of a 1927 Cadillac chassis into a 6-wheeled 12,68 m 41 ft 7 in, 3,7 tonnes vehicle was completed.

Round Britain Driving (p 139). The mileage for the Round Britain drive was 3644.3 miles 5864,7 km. The average speed was 46.41 mph 74,68 km/h.

Longest Bicycle (p 142). 4th line. For 60 cm read 60 m.

Fastest Train (p 143). 7th line. For T6V-PSE read TGV-PSE.

Airliner Largest (p 148). The greatest passenger load on a commercial airliner was 610 on a Trans-America airline Boeing 747 flight from Hong Kong to Oakland, California on 27 Feb 1981.

Autogyro Altitude (p 151). Wing Cdr Wallis reached 18,253 ft 5563,5 m in his WA-121 on 3 Aug 1982.

Distance Record (Ballooning) (p 151). The capacity of the *Double Eagle V* is 11 300 m³ 399,053 ft³.

Tidal Power Stations (p 153). A \$46 million (then £25.5 million) pilot Annanopolis River project for the Bay of Fundy was begun in 1981.

Turbine Largest (p 153). A 1000 MW turbine was tested at the Kharkov Turbine works, USSR in July 1982.

Gasworks Largest (p 153). The largest gasworks in the UK are the Breakwater Works at Oreston, Plymouth, Devon which opened in 1966-7 and cover an area of 19 acres 7,6 ha. They convert complex hydrocarbons into methane and produce 50 million ft³ 1 415 850 m³ per day.

Wire Rope Heaviest (p 157). The heaviest ever wire ropes (4 in number) are each of 130 tonnes/tons, made for the twin shaft system of Western Deep Levels Gold Mine, South Africa, by Haggie Rand Ltd.

Most Expensive Clock (p 157 & 158). The Thomas Tompion clock was bought by the British Museum by private treaty for £500,000 on 15 July 1982.

Computers (p 158). The 1500 valve programmable Colossus at Bletchley Park, Bedfordshire first ran in December 1943. Alan Turing's '1936 Paper' 'On Computable Numbers with an Application to the Entscheidungs Problem' was not published until 1937.

In a demonstration run at CDC's Cybernet Center, Arden Hills, Minnesota on 3 June 1982 the Cyber 205 attained 397,950,224 calculations in one second.

CHAPTER 9

Greatest Loss (p 159). The Argentine petroleum company YPF (Yacimientos Petroliferos) (Government owned) lost a record US \$3,820,963,000 in 1981.

Life Policy Largest (p 162). For Reges read Reyes.

Most Highly Valued UK Co. (p 164). The General Electric Company stock valuation was £6,104,267,000 on 26 July 1982.

US Stock Exchange (p 164). On 17 Aug 1982 the Dow Jones index climbed 38.81 points in a record one-day increase.

Largest Carpet (p 166). The carpet laid along the Avenue of the Americas measured 52,225 ft² 4851 m² in area.

Ceramics (p 166). For the world auction record for any ceramic object see Porcelain and Pottery, p 168.

Most Voracious Smoker (p 166). Simon Argevitch of Oakland, California raised his old record to 17 standard size cigars whilst simultaneously emitting bird calls, on Fishermans Wharf, San Francisco on 3 July 1982.

Cigarette Cards Most Valuable (p 167). A Honus Wagner American Tobacco Co. card was sold in New York in Dec 1981 for \$25,000 (then £13,900).

Silver Largest (p 169). The exact weight of the water jugs is 10,408 troy oz. They are 160 cm, 5 ft 3 in tall with a circumference of 2,48 m 8 ft 1 1/2 in. They are now at the City Palace, Jaipur. The silversmith was Gorind Narain.

CHAPTER 10

Altitude Woman (p 174). The greatest altitude attained by a woman is 280 km 174 miles by Miss Svetlana Savitskaya (b. 1948) of the USSR during her flight in Soyuz T7 launched on 19 Aug 1982.



Miss Svetlana Savitskaya (see below). (*Novosti*)

Most Travelled Man (p 175). Fred Specovius increased his record to 213 countries in 1982.

Trans-Atlantic Records (p 178). Smallest West-East—Tom McClean (Ireland) in *Giltspur*, 9 ft 9 in 2,97 m long—Newfoundland (22 June 1982)—Falmouth (12 Aug 1982) in 50 days 18 hr.

Mass Marriage Ceremony (p 180). The largest mass wedding ceremony was one of 2075 'ideal couples' officiated over by the Rev Sun Myung Moon in Madison Square Garden, New York, on 1 July 1982.

Most Expensive Wedding (p 180). The wedding reception of Jean-Claude Duvalier and Michelle Bennet at the Croix de Bouquets presidential ranch on 27 May 1980 is reported to have cost Haiti's National Treasury more than US\$1,000,000.

Barrel Jumping (p 182). The date of Yvon Jolin's jump was 25 Jan 1981.

Boomerang Throwing (p 183). For 107 m 351 ft read 111 m 364.1 ft. On 28 June 1982 under US rules Peter Ruhf (US) at Randwick, Sydney, NSW, Australia threw an out and return record of 375 ft 114,3 m. For Adri van der Berge read Ger Schurink. For Bièvres read Bièvres.

Bricklifting (p 183). Fred Burton of Cheadle, Staffs, lifted twenty-three 8 x 4 x 2 1/2 in bricks horizontally on BBC Radio Stoke on 19 May 1982. The span was 59 1/2 in 151 cm and the weight 107 1/2 lb 48,76 kg.

Champagne Fountain (p 184). Carl Groves and Keith Pepper successfully filled a column of 22 champagne glasses on 24 June 1982 at the Windsor Hotel, Melbourne, Australia.

Competition Winnings (p 184). Neil Gardiner of Gossops Green, West Sussex won a £32,000 Magirus 232 D 26Fk tipper in a competition run by Iveco UK Ltd in April 1982.

Crochet (p 184). Mrs Sonntag set a record for a crochet chain on 31 Oct 1981 with a strand measuring 34.9 miles 56,16 km.

Disco Dancing (p 185). The longest disco dancing marathon is one of 371 hr by John Sharples of Preston, Lancashire on 18 Jan - 3 Feb 1982.

Demolition Work (p 185). Fifteen members of the Black Leopard Karate Club demolished a 7-room wooden farmhouse west of Elnora, Alberta, Canada in 3 hr 18 min by foot and empty hand on 13 June 1982.

Feminine Beauty (p 186). Miss Canada, 18 year old Karen Baldwin won the 1982 Miss Universe contest held in Lima, Peru from a field of 77 on 26 July.

Handbell Ringing (p 187). The 12 Handbell Ringers of Ecclesfield School, Sheffield completed a 52 hr 9 min marathon on 17-19 July 1982.

High Diving (p 187). Roy Franses (GB) dived 108 ft 32,91 m from the roof of Earl's Court, London into a tank 8 ft 2,43 m deep in February 1946.

Human Chain Link (p 188). The highest recorded tensiometer reading in a human chain link is 515 lb 233,6 kg for 5 sec by Otto Acron *né* Alsop (b. 1935), who restrained the take-off of two Cherokee 140 aircraft pulling in opposite directions at Bankstown Airport, NSW, Australia on 25 June 1982.

Jumble Sale (p 188). The Cleveland Convention Center, Ohio, White Elephant Sale (inst. 1933) of 28-29 Oct 1981 rased \$382,270.19 (then £212,370). 2500 volunteers took \$120,000 (then £66,660) from more than 10,000 rummagers in the first 2 hours from 208,000 ft² 193 232 m² of stalls.

Kissing (p 188). Dave Ward of Piccadilly Radio, Manchester kissed 4079 girls in 8 hr on 13 Feb 1982.

Piano Playing (p 190). The longest piano playing marathon is one of 1218 hr

(50 days 18 hr) from 7 May to 27 June 1982 by David Scott at Wagga Wagga Leagues Football Club, NSW, Australia.

Pipe Smoking (p 190). William Vargo won his 5th World Championship in August 1982.

Parachuting (p 191). Highest Column – 14 man US team over Zephyrhills, Florida – Oct 1981.

Pope Stick Jumping (p 191). Michael Barban of St. Louis, Missouri achieved 122,171 jumps in 15 hr 26 min on 13 Feb 1982.

Spear Throwing (p 193). The greatest distance achieved throwing a Woomera Spear is 326 ft 6 in 99,51 m by Bailey Bush on 27 June 1982 at Campden, NSW, Australia.

Talking (p 194). Gyles Brandreth spoke at the London Embassy Hotel for 12 hr 40 min on 3–4 Apr 1982 in support of the National Playing Fields Association.

Whistling Loudest (p 195). Stephen West achieved 117 decibels at Blues Point, Sydney, NSW, Australia, on 26 June 1982.

Writing Miniscule (p 196). In Dec 1980 Michael Isaacson, Associate Professor of the School of Applied and Engineering Physics, Cornell University, Ithaca, New York, succeeded in etching the 16 letters in 'molecular devices' on a sodium chloride crystal with a 100,000 volt electron beam. The 'writing' was 2 nanometers wide. Juan de Gurtubay of San Sebastian wrote the Lord's Prayer (57 words in Spanish) on an area of 53,3 mm² 0.826 in² in 1930.

Return of Cash (p 197). Jim Priceman, 44, assistant cashier at Doft & Co Inc returned an envelope containing \$37.1 million (then £20.6 million) in negotiable bearer certificates found outside 110 Wall Street to A G Becker Inc of New York City on 6 April 1982. In announcing a reward of \$250 (then £140) Becker was acclaimed as 'being all heart'.

The Royal Society (p 201). Sir Rickard Christophers KT read Kt.

CHAPTER 11

World Population (p 203). New estimates: 1980—4432 million. 1981—4508 million.

Emigration (p 203). The number of UK citizens leaving in 1981 was 233,000.

Immigration (p 203). The number of New Commonwealth and Pakistani immigrants in 1981 was 56,000.

Reigns Longest (pp 206–7). King Sobhuza II of Swaziland died on 22 Aug 1982.

Head of State Youngest (p 207). Master Sgt Samuel Kanyon Doe, head of state of Liberia was born on 6 May 1952. He became Chairman of the People's Redemption Council in April 1980 aged 27.

Local Government Areas (table) (p 210). In the 1981 census the population of Belfast City was 297,862 and Moyle was 14,372.

British Electoral Records (p 211). n (see also z), refers to m, Peterborough Most Recounts.

Highest Percentage vote for any party (since 1832) has been 66.7% by the Liberals in 1832. Record number of MP's: 470 out of 615 by the Conservatives in 1931. Highest popular vote by a single party: 13,948,883 for Labour in 1951.

Longest British Trial (p 127). Bouzaglo and others appealed against sentences for conspiring to deceive on 10 Dec 1981. Trials costs to date were estimated at £2.5 million.

Best Attended Trial (p 217). Major Jesús Blanco was executed on 18 Feb 1959.

Defamation World (p 218). The *Penthouse* hearing ended in May 1982 with the magazine being cleared of libel. The witness described as the 'most colourful' was Aladena Frattiano alias 'Jimmy the Weasel'.

Most Durable Judge (p 218). Judge J. Frank Graff died on 2 Nov 1981 after 58 years 10 months 1 day continuous service on the bench.

Terrorist Outrages (p 220). The final death roll was reported to be 85 on 2 Aug 1982.

Mass Poisonings (p 221). The number of deaths attributed to the Spanish toxic oil scandal reached 327 by August 1982.

Most Foreign Debt (p 224). For Brazil, \$69,000 million, now read Mexico, \$80,000 million.

Biggest Round (p 227). On 14 July 1982, Paul Deer stood a free round of drinks for 1501 people at U-Zoo & Co, Atlanta, Georgia.

Most Expensive Food (p 227). A 50 g 1.76 oz tin of First Choice Black Périgord truffle costs £30.

Largest Barbecue (p 227). On 31 Jan 1981, 46,000 chicken halves supplied by Ernie Morgado were barbecued for 19,000 people at Iolani School, Honolulu, Hawaii.

Largest Beefburger (p 227). The largest beefburger on record is one of 3991 lb 1628.8 kg made for the centennial celebrations at Rutland, North Dakota, USA on 7 July 1982. The burger was 2½ in 6.35 cm thick, 16 ft 4.87 m in diameter and was cut into 6500 portions after grilling.

Largest Haggis (p 228). The haggis was made in January 1980.

Longest Pastry (p 228). A 'Dutch Letter' (flaky pastry filled with almond paste) 1233 ft 375.8 m long was baked by Jaarsma Bakery, Pella, Iowa, USA on 2 July 1981.

Traffic Jams Largest (p 231). The traffic jam on the M5 in Avon on 24 July 1982 stretched 18 miles 28,96 km from Falfield to Naish Hill in 3 hours.

Youngest Undergraduate (p 234). Ruth Lawrence (b. 1971) of Huddersfield, N. Yorks passed Pure Mathematics O level at the age of 9 and Pure Mathematics A level and Grade 1 S level in June 1981 aged 10. She was accepted for entrance to Oxford at the age of 12.

Most Expensive College (p 234). St. Andrew's Private Tutorial Centre, Cambridge, in the academic year 1981–82, charged £7648.50 for a science student (tuition and accommodation).

Longest Serving Chorister (p 237). Leonard Thompson died on 21 July 1982.

Accidents and Disasters (p 238). The Chinese Society of Hydraulic Engineering in Peking state the Hwang Ho flood of 1933 (sic) had 3,640,000 'victims' of whom 18,000 died. A figure of 900,000 fatalities was attributed to the overflow of the Yangtse in 1887. There were between 200,000 and 1,000,000 deaths caused by flood and starvation in Northern China in 1939.

CHAPTER 12

All Sports – Largest following (p 241). An estimated 1500 million people watched the 1982 Soccer World Cup Final on television.

Angling – World records (p 242). *Freshwater*. Bass, peacock 26 lb 12,02 kg Rod Neubert, DVM Mataveni River, Orinoco, Colombia 26 Jan 1982. Catfish, white 17 lb 7 oz 7,90 kg Chuck Idell Success Lake, Tulare, Cal, USA 15 Nov 1981. Tigerfish 46 lb 4 oz 21,00 kg George Cuturi Lake Tanganika, Zambia 10 Oct 1981. (p 243) *Sea fish*. Jack mackerel 54 lb 7 oz 24,69 kg Thomas F. Gibson Jr. Port Michel, Gabon 15 Jan 1982.

Archery – British record FITA Single Round (p 244). 1294 Steve Hallard at Worcester 24 July 1982.

Bowling – Largest bowling centre (p 250). Fukuyana Bowl, Osaka, Japan, with 144 lanes.

Canoeing – Most titles world (p 255). Vladimir Parfenovich (USSR) won 10 world titles from 1979 to 1982 including his three Olympic wins.

Cricket – All-rounders (p 260). Ian Botham took his career record to 2825 runs and 237 wickets in 52 Tests at 1 Aug 1982.

Marathon (p 263). 140 hr 10 min by Cronulla High School, NSW, Australia at Captain Cook Oval on 29 Nov–5 Dec 1981.

Cycling – World records (p 265). Men's indoor amateur by Sergei Kopylov (USSR) in Moscow on 3 July 1982 – unpaced standing start 1 km 1:00.279, unpaced flying start 500 m 28.040; women's outdoor unpaced standing start 5 km 6:41.75 Amanda Jones (GB) at Leicester 31 July 1982; 1 km 1:14.97 Sylvia Burka (Canada) at Montreal on 17 Aug 1982.

Most titles – British (p 266). Ian Hallam (b. 24 Nov 1948) has won a record 25 men's national titles from 1969–82.

Land's End to John o' Groats (p 266). The record is 1 day 21 hr 3 min 16 sec (av. speed 18.80 mph 30,25 km/h) by John Woodburn (b. 22 Dec 1936) on 13–15 Aug 1982).

British records (p 267). 3 km Amanda Jones 3:59.701 at Leicester 30 July 1982 (and 5 km as above).

Darts – Marathon (p 268). 125 hr 6 min by Malcolm John Daniels and David Robert Burstow on 15–20 July 1982 at the Harbour Tavern, Mevagissey, Cornwall.

Football – Ball Control (p 277). Mikael Palmqvist headed a football for 3 hr 26 min 12 sec at Cologne, Germany on 17 Aug 1982.

Football (Rugby Union) – Longest Try (p 281). A team from University College, Cardiff ran a try of 1001.5 miles 1611,75 km on 7–12 Apr 1982 to touch down at Cardiff Arms Park.

Gambling – World's biggest win (p 281). An unnamed player won \$5.5 million in the Pennsylvania weekly Lotto game announced on 19 June 1982.

Golf – Highest earnings (p 286). US LPGA, JoAnne Carner with \$1,205,132 to 1 July 1982.

Holes in One (p 287). Harry Bonner shot his 61st 'ace' on 25 July 1982.

Harness Racing – Highest Price (p 289). Mystic Park, a three-year-old trotter was syndicated for \$5,250,000 in July 1982.

Horse Racing – Horse Highest Price (p 291). *Conquistador Cielo* was syndicated for \$36.4 m, 40 shares at \$910,000 each, on 13 Aug 1982.

Swimming – World's Men's 100 m Breaststroke Record (p 320). Steven Lundquist, 1:02.53, Indianapolis, USA on 21 Aug 1982.

British Men's 100 m Freestyle Record (p 320). Ricky Burrell, 51.74, Crystal Palace, London on 22 Aug 1982.

Diving (p 322). Greg Louganis (USA) won a gold medal in 1978 and two in 1982 in the world championships.

Treading water marathon (p 324). 80 hr by V. S. Kumar Anandan at Anna Swimming Pool, Madras, India on 28 June–2 July 1981.

Weightlifting (p 337). World powerlifting records for the super-heavyweight class (men—125 kg+) Dwayne Fely (USA): squat 445 kg. Bill Kazmaier (USA): bench press 300 kg; Dead-lift 402 kg; Total 1100 kg; (women—90 kg+) Jan Todd (USA): squat 247 kg; Total 557,5 kg. Gael Mulhall (Aus): bench press 225 kg. Wanda Sanders (USA): dead-lift 230 kg.

An asterisk indicates a further reference in the Stop Press

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